

FINDING OF NO SIGNIFICANT IMPACT

NAME OF THE PROPOSED ACTION

Replace Family Housing Phase IV at Malmstrom Air Force Base, Montana.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Malmstrom Air Force Base (AFB) proposes to demolish or remove 100 existing on-base family housing units and construct 94 new units in their place. Concrete from the demolition activities will be hauled to an existing stockpile area for crushing and recycling. Fill soil will be excavated from a borrow area near the concrete stockpile area and hauled to the project site. This soil will be used to raise the elevation of the housing property for proper drainage and to back fill the open basements from the demolished housing units. Hauling of the demolition debris and backfill soils will occur along Perimeter Road from the current residential area around the north end of the runway to the stockpile and borrow areas. Under the No Action Alternative, the proposed housing replacement would not occur.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This Environmental Assessment (EA) provides an analysis of the potential environmental consequences associated with the Proposed Action and the No Action Alternative. Nine resource categories received thorough evaluation to identify potential environmental consequences. As indicated in Chapter 4.0, the Proposed Action would not result in significant impacts to any resource area. The No Action Alternative would result in no impacts (positive or negative); however, the No Action Alternative would not accomplish the housing replacement objective.

Air quality impacts, while not significant, will occur due to exhaust emissions from construction equipment and from fugitive dust created during the demolition/construction process, soil excavation at the borrow area, and from the concrete crushing activities at the stockpile area. Current air quality in the region of influence is excellent. Future phases of housing renovation and replacement and associated construction, though not likely, may impact the attainment status of the region.

Implementation of the Proposed Action will have temporary increases in localized noise levels in the project area during construction. Noise will be typical construction noise, lasting for the duration of the specific construction activities. However, noise will be mitigated by the use of equipment sound mufflers and restricting construction activity to normal working hours. Although noise disruptions would be temporary and would be limited to daytime hours, these disruptions will be very noticeable.

Implementation of the Proposed Action will result in transportation-related impacts. Repeated use of Perimeter Road by heavy hauling vehicles will cause wear and tear not consistent with the planned road usage. This impact is not significant, but as future phases of planned construction are executed, road damage is a potential cumulative impact, although not significant if the roads are maintained.

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14. ABSTRACT The United States Air Force (Air Force), as the 341st Civil Engineer Squadron (341 CES) proposes to demolish 100 existing family housing units and rebuild 94 in their place. This is the fourth phase of housing upgrades, with several additional phases to follow. This Environmental Assessment (EA) has been prepared to analyze the potential environmental consequences associated with the Proposed Action and No Action Alternatives in accordance with the National Environmental Policy Act (NEPA) of 1969 (?42 United States Code [USC]4321-4347), Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (?40 Code of Federal Regulations [CFR] 1500-1508), and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (?32 CFR 989, et seq.).				
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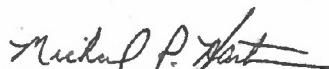
Under the Proposed Action, the overall ecological effect would be insignificant. Construction of the soil borrow area would disturb an area that is not currently developed or landscaped. There would be no impacts to wetlands and the Proposed Action would not conflict with the wetlands management program at Malmstrom AFB. No special species or sensitive habitats are expected to be impacted. Standard construction practices would be applied to control sedimentation and erosion during construction, thereby avoiding secondary effects to any wetlands or freshwater aquatic communities.

Construction is not expected to significantly affect the water quality of Pow Wow Pond near the soil borrow area. Filtration would control storm water runoff and soil erosion from the site and silt fences and other appropriate standard construction practices would be employed. The replacement of existing housing under the proposed action will not impact the quality or quantity of storm water discharged from the installation.

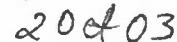
Prior to any demolition activities associated with the Proposed Action, all of the housing units would be re-inspected to identify all asbestos, including Category I and Category II non-friable asbestos-containing material (ACM) and lead-containing materials. All waste ACM would be transported and disposed of in accordance with applicable federal and state regulations. Lead-containing materials would also be disposed of in accordance with applicable regulations.

CONCLUSION

In accordance with the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA), as amended, and the Air Force Environmental Impact Analysis Process regulations contained in 32 Code of Federal Regulations (CFR) 989, an assessment of the environmental effects has been completed for the Phase IV replacement of family housing units at Malmstrom AFB. I have determined that the Proposed Action will have not have a significant adverse impact on the environment or the quality of the human environment. Therefore, an Environmental Impact Statement is not required.



MICHAEL P. HARTMANN, Colonel, USAF
Chairman Environmental Protection Committee



Date

**FINAL
ENVIRONMENTAL ASSESSMENT FOR
REPLACE FAMILY HOUSING PHASE IV AT
MALMSTROM AIR FORCE BASE, MONTANA**



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TABLE OF CONTENTS

1.0 PURPOSE OF AND NEED FOR PROPOSED ACTION	1
1.1 INTRODUCTION	1
1.2 BACKGROUND	1
1.3 PURPOSE OF AND NEED FOR PROPOSED ACTION.....	4
1.4 SCOPE OF THE ENVIRONMENTAL REVIEW.....	7
1.5 OTHER APPLICABLE REGULATORY REQUIREMENTS.....	7
1.5.1 <i>Air Quality</i>	7
1.5.2 <i>Water Quality</i>	8
1.5.3 <i>Public Health and Safety/Hazardous Waste</i>	8
1.5.4 <i>Biological Resources</i>	8
1.5.5 <i>Cultural, Paleontological, and Archaeological Resources</i>	9
2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES.....	11
2.1 PROPOSED ACTION	11
2.1.1 <i>Demolition</i>	11
2.1.2 <i>CDW Hauling and Disposal/Recycle</i>	12
2.1.3 <i>Soil Borrow and Backfill</i>	13
2.1.4 <i>New Home Construction</i>	15
2.2 NO ACTION ALTERNATIVE	15
2.3 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD.....	15
2.4 ENVIRONMENTAL IMPACT ANALYSIS PROCESS	16
2.4.1 <i>Scope of Resource Analysis</i>	16
2.4.2 <i>Public and Agency Involvement</i>	16
2.4.3 <i>Regulatory Compliance</i>	17
2.4.4 <i>Permit Requirements</i>	17
2.5 COMPARISON OF ALTERNATIVES.....	17
3.0 AFFECTED ENVIRONMENT	19
3.1 AIR RESOURCES	19
3.1.1 <i>Climatology and Meteorology</i>	21
3.1.2 <i>Air Quality</i>	22
3.2 WATER RESOURCES	23
3.2.1 <i>Groundwater</i>	24
3.2.2 <i>Surface Water</i>	24
3.3 GEOLOGICAL RESOURCES	25
3.4 BIOLOGICAL RESOURCES.....	26
3.4.1 <i>Vegetation, Wetlands, and Floodplains</i>	26
3.4.2 <i>Wildlife</i>	27
3.5 CULTURAL RESOURCES	27
3.5.1 <i>Historical Setting</i>	27
3.5.2 <i>Identified Cultural Resources</i>	30
3.6 NOISE	32
3.6.1 <i>Residential Areas</i>	34
3.6.2 <i>Concrete Stockpile/Soil Borrow Area</i>	34

3.7	HEALTH, SAFETY, AND WASTE MANAGEMENT.....	34
3.7.1	<i>Public Health Management.....</i>	34
3.7.2	<i>Worker Safety and Health</i>	35
3.7.3	<i>Solid and Hazardous Waste Management.....</i>	35
3.7.4	<i>Sewage and Storm Water Waste Management.....</i>	35
3.7.5	<i>Environmental Remediation Activities</i>	36
3.7.6	<i>Pesticides.....</i>	36
3.7.7	<i>Harmful Substances.....</i>	36
3.8	LAND USE, TRANSPORTATION, AND VISUAL RESOURCES	37
3.8.1	<i>Land Use.....</i>	37
3.8.2	<i>Transportation.....</i>	38
3.8.3	<i>Visual Resources</i>	38
3.9	SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE.....	39
3.9.1	<i>Definition of the Resource</i>	39
3.9.2	<i>Population and Employment</i>	39
3.9.3	<i>Environmental Justice and Protection of Children</i>	40
4.0	ENVIRONMENTAL CONSEQUENCES.....	41
4.1	AIR RESOURCES	41
4.1.1	<i>Potential Impact from Proposed Action</i>	41
4.1.2	<i>Potential Impact from the No Action Alternative.....</i>	42
4.2	WATER RESOURCES	42
4.2.1	<i>Potential Impact from Proposed Action</i>	42
4.2.2	<i>Potential Impact from No Action Alternative.....</i>	43
4.3	GEOLOGICAL RESOURCES	43
4.3.1	<i>Potential Impact from Proposed Action</i>	43
4.3.2	<i>Potential Impact from No Action Alternative.....</i>	43
4.4	BIOLOGICAL RESOURCES.....	43
4.4.1	<i>Potential Impact from Proposed Action</i>	44
4.4.2	<i>Potential Impact from No Action Alternative.....</i>	44
4.5	CULTURAL RESOURCES	44
4.5.1	<i>Potential Impact from Proposed Action</i>	45
4.5.2	<i>Potential Impact from No Action Alternative.....</i>	46
4.6	NOISE RESOURCES.....	46
4.6.1	<i>Potential Impact from Proposed Action</i>	46
4.6.2	<i>Potential Impact from No Action Alternative.....</i>	49
4.7	HEALTH, SAFETY, AND WASTE MANAGEMENT.....	49
4.7.1	<i>Potential Impact from Proposed Action</i>	49
4.7.2	<i>Potential Impact from No Action Alternative.....</i>	50
4.8	LAND USE	50
4.8.1	<i>Potential Impact from Proposed Action</i>	50
4.8.2	<i>Potential Impact from No Action Alternative</i>	51
4.9	SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE IMPACTS.....	51
4.9.1	<i>Potential Impact from Proposed Action</i>	51
4.9.2	<i>Potential Impact From No Action Alternative.....</i>	52
5.0	CUMULATIVE EFFECTS.....	53

5.1 DEFINITION OF CUMULATIVE EFFECTS	53
5.2 PAST AND PRESENT ACTIONS RELEVANT TO THE PROPOSED ACTION	53
5.3 ANALYSIS OF CUMULATIVE IMPACTS	54
5.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES	55
6.0 REFERENCES	57

LIST OF TABLES

Table 1: Malmstrom AFB On-Base Housing Inventory.....	6
Table 2: Maximum Net Floor Area Authorized by Air Force Guidance.....	7
Table 3: Phase IV Replacement Housing Project Schedule	11
Table 4: Summary of Potential Environmental Impacts of Proposed Action and No Action Alternatives	18
Table 5: Montana and Federal Ambient Air Quality Standards	20
Table 6: Climate Data for Great Falls, MT	22
Table 7: Cold War Facilities at Malmstrom AFB.....	32
Table 8: Typical Day-Night Noise Levels in Urban Areas in the U.S.	33
Table 9: Noise Levels for Construction Phases	46

LIST OF FIGURES

Figure 1: Vicinity Map of Malmstrom AFB.....	2
Figure 2: Location Map for Features of the Proposed Action	3
Figure 3: Malmstrom AFB Family Housing Renovation Schedule.....	5
Figure 5: Proposed Soil Borrow Area Vicinity Map	14
Figure 6: Surface Water Drainage Patterns at Malmstrom AFB	25
Figure 7: Phase IV Housing Construction Schedule.....	47

LIST OF ACRONYMS

341 CES	341 st Civil Engineer Squadron
341 CES/CEV	341 st Civil Engineer Squadron/Environmental Flight
°F	degrees Fahrenheit
AAQS	Ambient Air Quality Standards
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
AFB	Air Force Base
AFI	Air Force Instruction
AICUZ	Air Installation Compatible Use Zone
Air Force	United States Air Force
AIRFA	American Indian Religious Freedom Act
APE	area of potential effect
AQCR	Air Quality Control Region
ARG	Air Refueling Group
ARM	Administrative Rule of Montana
BMP	Best Management Practices
CAA	Clean Air Act
CAAA	Clean Air Amendment Act
CDW	Construction/Demolition Waste
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon dioxide
CWA	Clean Water Act
CY	cubic yards
dB	decibel
dBA	A-weighted decibel
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EO	Executive Order
EOD	explosive ordnance disposal
ESA	Endangered Species Act
FY	Fiscal Year
H ₂ S	hydrogen sulfide
IRP	Installation Restoration Program
LBP	lead-based paint
L _{dn}	Day/Night Average Sound Level
L _{eq}	energy-equivalent sound/noise descriptor
MCA	Montana Code Annotated
mg/L	milligrams per liter
MDEQ	Montana Department of Environmental Quality
MPDES	Montana Pollutant Discharge Elimination System
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves and Repatriation Act
NEPA	National Environmental Policy Act

NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHP	Natural Heritage Program
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NORAD	North American Aerospace Defense Command
NRHP	National Register of Historic Places
O ₃	ozone
ODS	Ozone-depleting substance
OSHA	Occupational Safety and Health Administration
Pb	lead
PCB	Polychlorinated biphenyl
P.L.	Public Law
PM _{2.5}	respirable particulate matter less than 2.5 micrometers in diameter
PM ₁₀	respirable particulate matter less than 10 micrometers in diameter
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
RED HORSE	Rapid Engineer Deployable Heavy Operational Repair Squadron, Engineer
ROI	region of influence
SF	square feet
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SO _x	sulfur oxides
SWPPP	stormwater pollution prevention plan
TCLP	Toxicity Characteristic Leaching Procedure
U.S.	United States
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOCs	volatile organic compounds

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**ENVIRONMENTAL ASSESSMENT
REPLACE FAMILY HOUSING PHASE IV
MALMSTROM AIR FORCE BASE; GREAT FALLS, MONTANA**

1.0 PURPOSE OF AND NEED FOR PROPOSED ACTION

1.1 Introduction

The United States Air Force (Air Force), as the 341st Civil Engineer Squadron (341 CES) proposes to demolish 100 existing family housing units and rebuild 94 in their place. This is the fourth phase of housing upgrades, with several additional phases to follow.

This Environmental Assessment (EA) has been prepared to analyze the potential environmental consequences associated with the Proposed Action and No Action Alternatives in accordance with the National Environmental Policy Act (NEPA) of 1969 (§42 United States Code [USC] 4321-4347), Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (§40 Code of Federal Regulations [CFR] 1500-1508), and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (§32 CFR 989, et seq.).

Section 1.2 provides background information on Malmstrom Air Force Base (AFB). The purpose of and need for the Proposed Action are discussed in section 1.3. A detailed description of the Proposed Action and the No Action Alternative is provided in Chapter 2.0. Chapter 3.0 describes the existing conditions of various environmental resources that could be affected by the Proposed Action or the No Action Alternative. Chapter 4.0 describes how those resources would be affected by implementation of the Proposed Action or the No Action Alternative. Chapter 5.0 evaluates the cumulative effects of the Proposed Action. Chapter 6.0 is a list of references cited in the preparation of this EA.

1.2 Background

Malmstrom AFB encompasses over 3,600 acres of land in Cascade County in west central Montana (Figure 1). The base lies approximately 0.3 miles east of the City of Great Falls city limit at its closest point and is 5 miles from the central business district of the City. Interstate Highway 15 passes along the western boundary of Great Falls. Access to the base main gate is off U.S. Highway 87/89, east of Interstate Highway 15, via 2nd Avenue North.

As shown on Figure 2, the homes to be replaced are located on:

- Aspen Street between 70th Street North and Cedar Street;
- Cedar Street between Oak Street and 72nd Street North; and
- Dogwood Street between Plum Street and Maple Street.

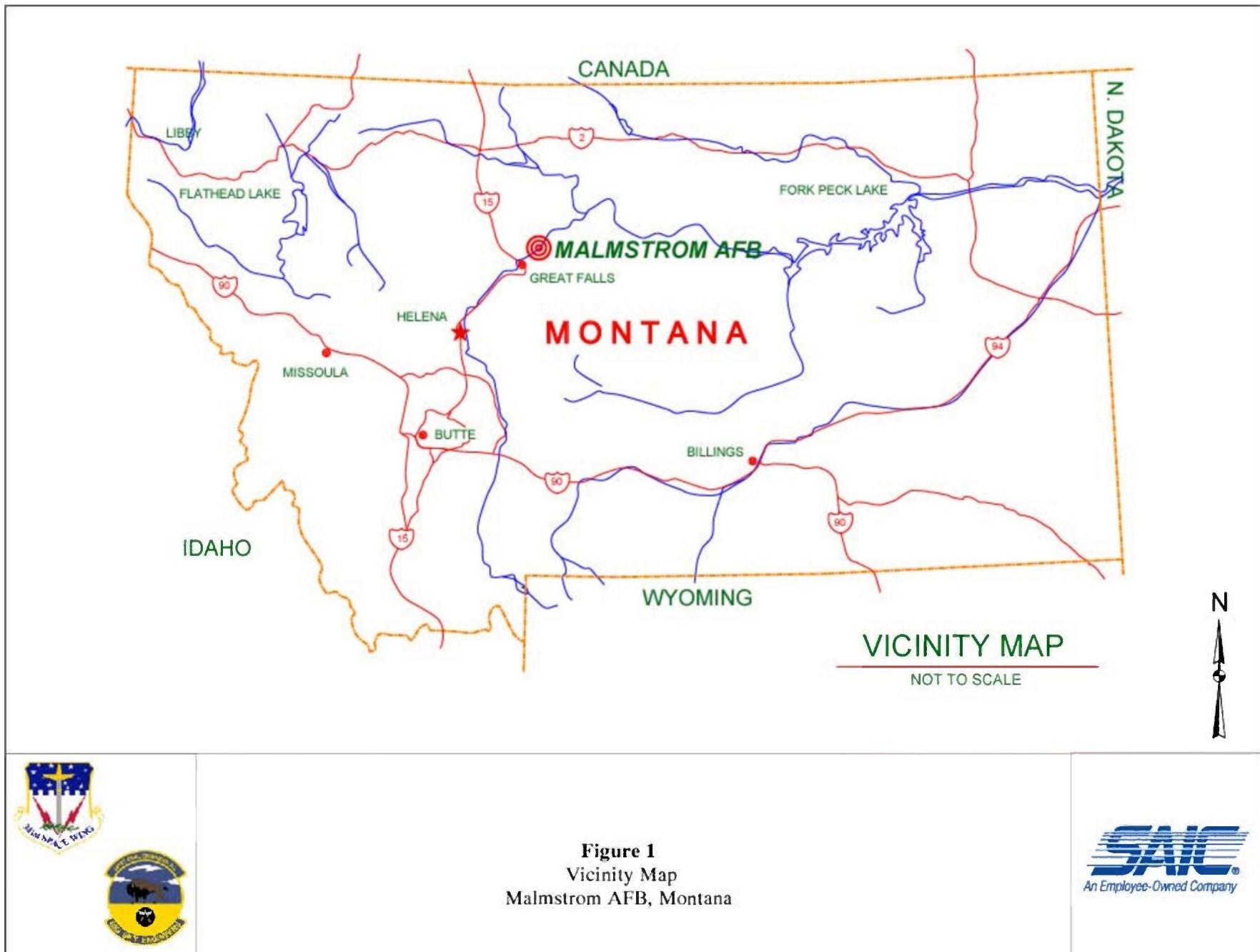


Figure 1
Vicinity Map
Malmstrom AFB, Montana

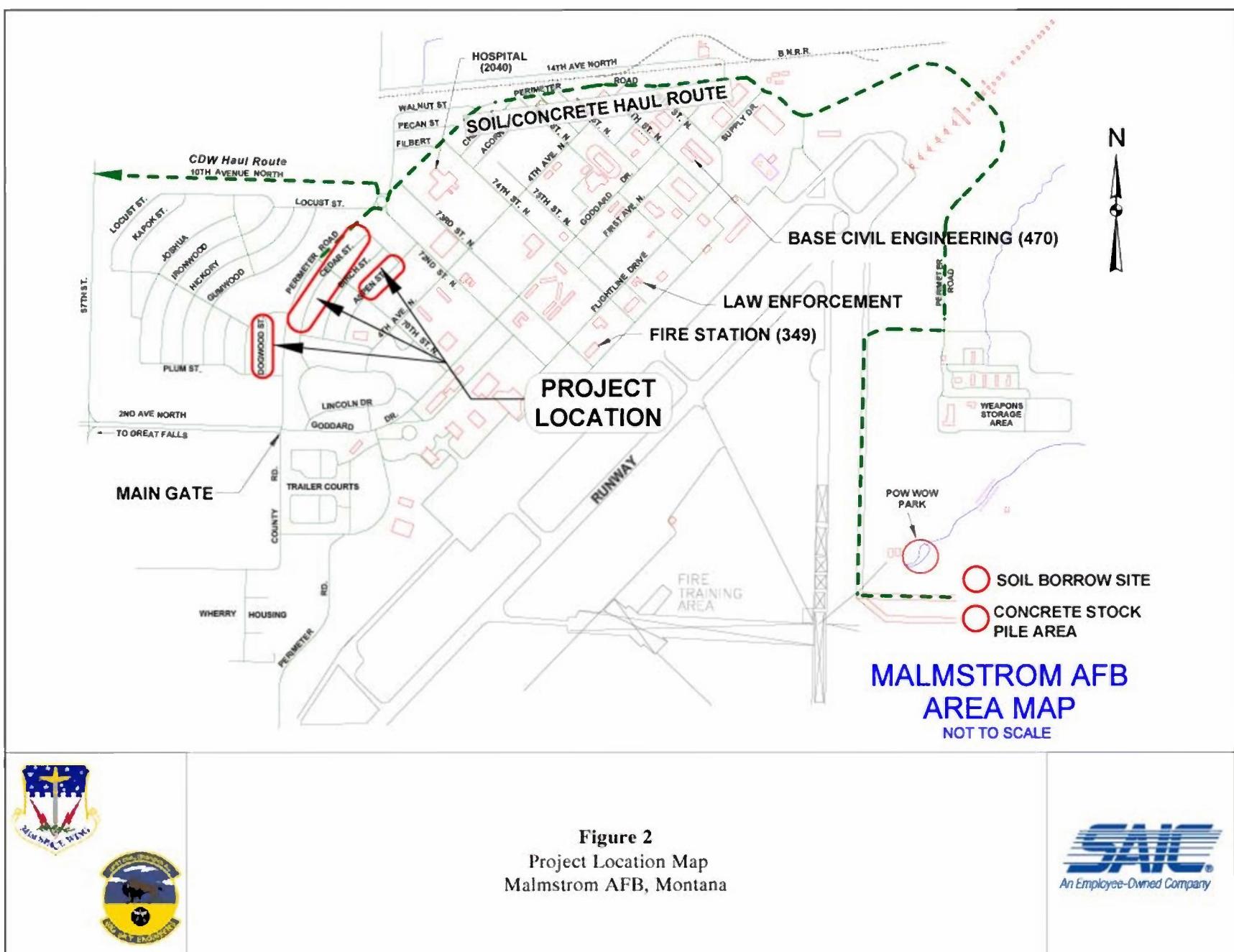


Figure 2
Project Location Map
Malmstrom AFB, Montana



Malmstrom AFB provides on-base family housing for military personnel and their families. Over 600 housing structures, comprised of multi-family apartments, duplexes, and single-family homes, house over 1,400 family units.

1.3 Purpose of and Need for Proposed Action

The purpose of this action is to replace substandard housing with adequate housing. The bulk of the currently available family housing at Malmstrom AFB includes structures that are typically 30 to 40 years old and no longer meet the Air Force's standards for military housing. Of the 1,406 housing units on base, only 377 are deemed adequate according to current Air Force Housing Guidance (Air Force 1995a; 2003).

The purpose of the Air Force Housing Community Plan and the whole house/whole neighborhood focus is to increase the overall quality of the entire family housing area. It provides a comprehensive plan for improving the overall quality of the family housing environment by integrating elements such as utility and infrastructure planning, site planning, open/recreation space development, and "streetscape" development (Air Force 1995a). The goal of neighborhood design for Air Force family housing is to develop and sustain a residential environment that responds to the Air Force family and reinforces the connection between the families and the community.

In spite of routine maintenance, many of the homes have deteriorated to a point where replacement is the most economical alternative. Air Force guidance states that if the cost of renovation exceeds 70 percent of the replacement cost, then the housing unit should be replaced (Air Force 1995a). Recent inspections of the on-base housing reveal that:

- Most electrical wiring and fixtures do not meet current building codes, wiring is brittle and exposed in many units and is a fire hazard; there are no Ground Fault Interrupter circuit protectors; and outlets lack proper grounding protection.
- Plumbing systems have succumbed to the effects of hard water and corrosion, resulting in severe constriction and pipe leakage, and plumbing fixtures are worn and discolored and require replacing.
- Bedrooms are small and lack closet space.
- Bathrooms are small and fixtures are outdated and energy-inefficient.
- Kitchens lack sufficient storage and counter space, cabinets are old and unsightly, and countertops and sinks are badly worn.
- Flooring throughout the homes is outdated.
- Asbestos has been detected in flooring, counter tops, roofing material, and insulation.
- Lead-based paint (LBP) has been detected on both interior and exterior surfaces.

This Proposed Action is one phase of multiple phases planned to upgrade all of the on-base family housing at Malmstrom AFB. Figure 3 and Table 1 show the current housing inventory and actual or planned dates for renovation or replacement.

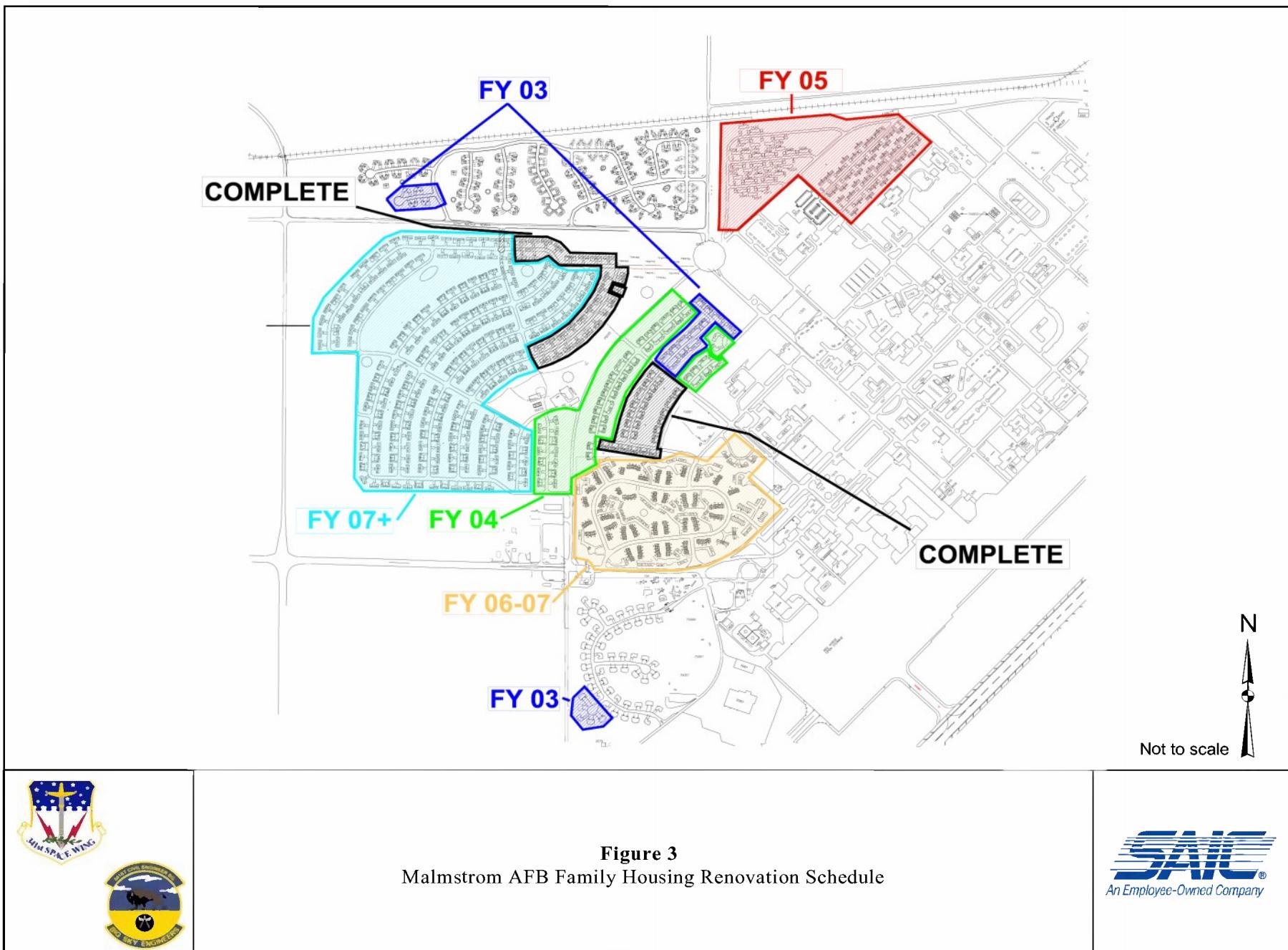


Table 1: Malmstrom AFB On-Base Housing Inventory

Neighborhood	Renovated	Bedrooms	Net Sq.Ft.	No. of Units	Construction Schedule
Atlas Village	No	2	808	219	Fiscal Year (FYs) 06-07
	No	3	1,038	74	
	No	3	1,148	6	
	No	3	1,259	4	
Jupiter	No	3	1,707	96	FY 05
Matador Manor	No	3	1,522	6	Scheduled for FY 03
Minuteman Village	Yes	3	1,522	35	New construction in FY 00
	Yes	3	1,534	35	
	Yes	3	1,574	6	
	Yes	4	1,722	6	
Peacekeeper Park	No	3	1,522	2	Scheduled for FY 03
	No	3	1,534	2	
	Yes	2	1,282	10	New Construction in FY 98
	Yes	3	1,838	2	
	Yes	3	1,574	140	
	Yes	3	1,707	4	
	Yes	3	1,880	2	
	Yes	3	1,954	10	
Titan Village	Yes	4	1,888	20	Completed in FY 00
	Yes	3	1,775	10	
	Yes	3	1,813	10	
	Yes	4	1,707	2	
	Yes	4	2,072	22	
	Yes	4	2,116	6	Ten to be replaced in FY 04, others in FY 07+
	No	3	1,038	157	
	No	3	1,116	140	
	No	3	1,259	73	
	No	3	1,838	20	
Washington Circle	No	4	1,707	96	Four to be replaced in FY 04, others in FY 07+
	No	4	1,888	10	
	Yes	2	1,353	48	Completed in FY 98
	Yes	4	1,838	4	
	No	2	1,311	6	To be replaced in FY 2004
	No	2	1,353	20	To be replaced in FY 2004
	No	3	1,838	20	2 Scheduled for 2003, 20 to be replaced in FY 04
	No	3	1,707	10	Scheduled for FY 03
	No	3	1,838	6	To be replaced in FY 04
	No	4	1,707	2	To be replaced in FY 04

Bold/shading indicates housing included in the Proposed Action analyzed in this EA.

Table 2 lists the maximum net floor area authorized by paygrade according to the Air Force Family Housing Guide (Air Force 1995a). Much of the available family housing at Malmstrom AFB is substantially smaller than these guidelines.

Table 2: Maximum Net Floor Area Authorized by Air Force Guidance

If the occupant's paygrade is	Then the number of bedrooms is	And the maximum net floor area is
0-7 and above	4	2,100 SF
0-6	4	1,700 SF
0-4 and 0-5	4	1,550 SF
	3	1,700 SF
0-1 through 0-3 and E-7 through E-9	5	1,550 SF
	4	1,700 SF
	3	1,350 SF
	2	950 SF
E-1 through E-6	5	1,550 SF
	4	1,350 SF
	3	1,200 SF
	2	950 SF

This document addresses the impacts related to the replacement of approximately 100 homes, with construction planned in FY 2004. This includes the removal of 24 homes in the Peacekeeper neighborhood and 76 homes in the Titan Village neighborhood and the construction of 94 new homes in the same areas.

1.4 Scope of the Environmental Review

This EA was prepared in accordance with NEPA of 1969, CEQ regulations (§40 CFR 1500-1508), and AFI 32-7061. As allowed by §40 CFR 1500.4 and 1502.20 and AFI 32-7061, this EA focuses on specific issues and concerns affecting Malmstrom AFB.

1.5 Other Applicable Regulatory Requirements

Each environmental resource is regulated and/or protected by federal and State of Montana regulations. In establishing the background conditions and assessing the potential environmental consequences of the Proposed Action, the following regulations were also considered.

1.5.1 Air Quality

The Montana Clean Air Act (Montana Code Annotated [MCA], Title 75, Chapter 2) implements the federal Clean Air Act (CAA). The Montana Clean Air Act, implemented by the Air Quality Procedural Regulations, the Air Quality Regulations, and the Ambient Air Quality Standards (AAQS), establishes ambient air quality standards and permitting and monitoring procedures.

The Clean Air Amendment Act (CAAA) of 1990 established new federal nonattainment classifications, new emission control requirements, and new compliance dates for nonattainment areas. The requirements and compliance dates are based on the severity of nonattainment classification.

1.5.2 Water Quality

The Water Pollution Control Law (MCA 75.05) sets forth water conservation, water quality protection, and pollution prevention and abatement measures. Implementing regulations include the Water Pollution Control Regulations (Administrative Rule of Montana [ARM], Title 16, Chapter 20, Subchapter 7).

The Montana Pollutant Discharge Elimination System (MPDES) Rules (ARM 16.20.09) establish effluent limitations, treatment standards, and other requirements for point source discharge of waste into state waters, including storm water runoff.

The Groundwater Pollution Control Regulations (ARM 16.20) establish groundwater classification, and set forth protection and permitting requirements, while the Surface Water Quality Standards (ARM 16.20.06) establish surface water quality criteria to ensure public health and safety and provide for water conservation.

1.5.3 Public Health and Safety/Hazardous Waste

The Waste and Litter Control Act (MCA 75.10) provides for coordinated state solid waste management and a resource recovery plan. The Integrated Waste Management Act (MCA 75.10) provides for waste reduction and recycling programs.

The Hazardous Waste Act (MCA 75.10), and the Hazardous Waste Management Regulations (ARM 17.53) control the generation, storage, transportation, treatment, and disposal of hazardous wastes; the Act also authorizes the state to implement a program pursuant to the federal Resource Conservation and Recovery Act (RCRA).

The Refuse Disposal Regulations (ARM 17.50) implement the hazardous waste act and regulations. These regulations provide uniform standards for the storage, treatment, recycling, recovery, and disposal of solid waste, including hazardous waste, and the transportation of hazardous waste.

1.5.4 Biological Resources

The Endangered Species Act (ESA) (§16 USC 1531-1543) requires federal agencies that authorize, fund, or carry out actions to avoid jeopardizing the continued existence of endangered or threatened species or destroying or adversely modifying their critical habitat. Federal agencies must evaluate the effects of their actions on endangered or threatened species of fish, wildlife, and plants and their critical habitats and take steps to conserve and protect these species. The Act requires the avoidance or mitigation of all potentially adverse impacts to threatened and endangered species.

Executive Order (EO) 11990, Protection of Wetlands, requires federal agencies to take action to avoid, to the extent practicable, the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. The intent of EO 11990 is to avoid direct or indirect construction in wetlands if a feasible alternative is available. All federal and federally-supported activities and projects must comply with EO 11990. In addition, activities occurring in jurisdictional wetlands, and other Waters of the United States (U.S.) require compliance with Section 404 of the Clean Water Act (CWA) administered by the U.S. Army Corps of Engineers and Section 401 of CWA administered by the United States Environmental Protection Agency (USEPA) for on-base lands and the Montana Department of Environmental Quality (MDEQ) for off-base lands.

1.5.5 Cultural, Paleontological, and Archaeological Resources

The primary goal of the National Historic Preservation Act (NHPA) of 1966 (§16 USC 470 et seq., as amended), is to ensure adequate consideration of the values of historic properties in carrying out federal activities and to attempt to identify and mitigate impacts to significant historic properties. The NHPA is the principal authority used to protect historic properties. Federal agencies must determine the effect of their actions on cultural resources and take certain steps to ensure they locate, identify, evaluate, and protect all resources. §36 CFR 800 defines the responsibilities of the State, the Federal Government, and the Advisory Council on Historic Preservation (AChP) in protecting historic properties identified in a project area. Section 106 of the NHPA and its implementing regulations mandate identification of cultural resources which would be potentially affected by project activities and that the Air Force address the effects of the undertaking on such resources. §36 CFR 60 establishes the National Register of Historic Places (NRHP) and defines the criteria for evaluating eligibility of cultural resources to the NRHP.

The Archaeological Resources Protection Act of 1979 (§16 USC 470a-470mm, as amended) protects archaeological resources on federal lands. If an agency discovers archaeological resources during site activities, the act requires permits for excavating and removal of any archaeological resources.

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2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section describes the elements of the Proposed Action, including demolition of existing housing and reconstruction of new housing. As part of the project, demolished concrete will be hauled to an existing stockpile area and a new soil borrow site will be created.

2.1 Proposed Action

The Proposed Action involves the demolition of approximately 100 housing units (51 structures) and reconstruction of 94 new housing units. This section discusses each of the project components including housing demolition, demolition material hauling, soil borrow and backfill, and new housing construction. The current project schedule is shown in Table 3.

Table 3: Phase IV Replacement Housing Project Schedule

Activity	Date
Bid Documents Complete	26 September 2003
Bid Advertises	27 October 2003
Bid Closes	5 December 2003
Contract Awarded	9 January 2004
Notice to Proceed	22 January 2004
Construction Complete	5 August 2005
Occupancy	6 August 2005

2.1.1 Demolition

The homes to be demolished include:

- 12 duplexes (6 structures) and 2 single family homes in the 700 block of Aspen Street;
- 60 duplexes (30 structures) in the 400, 500, 600, 700 and 800 blocks of Cedar Street; and
- 26 duplexes (13 structures) in the 400 and 500 blocks of Dogwood Street.

Most of the homes scheduled for demolition are currently occupied. As families vacate the homes due to service-related transfers or personal choice, these homes are left unoccupied. All families that still occupy the affected housing units will be relocated, approximately one month prior to the start of demolition, to suitable on-base or off-base housing for the duration of the project. Once construction is complete, they will be moved back to the new units, with choice of housing based on the service person's paygrade.

The structures are basic wood-framed houses with spread footing foundations, composition roofing material, and aluminum siding. Of the structures planned for demolition, 40 are two-story and 11 are single-story. Each duplex also has an attached carport for each unit (Figure 4). A recent survey (Hart Crowser 2003) has identified LBP and asbestos-containing building materials (ACM) in all of the homes tested (13 of the 100), so the contractor must follow State of Montana and USEPA guidelines for managing these materials (USEPA 1983).

All utilities are underground. Houses are heated with natural gas-fired forced-air furnaces. Other buried utilities include water and sewer, telephone, and television cable. Telephone and electrical services were originally installed above ground, but have been buried during one of many interim renovations of these homes.

All aboveground structures will be demolished using typical construction techniques (e.g., trackhoes, bulldozers, backhoes, and dump trucks) to accomplish the demolition work. The construction/demolition waste (CDW) will be hauled offsite for disposal in accordance with State of Montana solid waste regulations. The closest privately-operated commercial Class A landfill is approximately 15 miles north of the base on the Havre Highway (Montana State Highway 89). A smaller privately-owned landfill four miles northeast of the base also accepts CDW. The construction specifications will encourage the contractor to recycle waste materials as much as possible.



Figure 4: Typical Housing Slated for Replacement

The 13 duplexes on Dogwood Street that are part of the Phase IV housing replacement project have been offered to the Operation Walking Shield program. Operation Walking Shield is a non-profit organization that seeks to alleviate poverty on Indian Reservations. Operation Walking Shield has worked with Malmstrom AFB in the past to transfer family housing units from the base to Indian Reservations. The base is responsible for disconnecting the units from utilities. The Indian Tribe(s) take ownership of the units and are responsible for moving the units and installing them on the reservation. The Air Force provides the Indian tribes with all the known information on the presence of lead based paint and asbestos within the units in accordance with Air Force, state, and federal regulations. The process is beneficial to the tribes by providing low cost housing and to the Government by reducing disposal costs and waste disposal volumes. No decision has yet been made whether Operation Walking Shield will move the structures or whether they will be demolished.

2.1.2 CDW Hauling and Disposal/Recycle

The primary haul route for CDW-laden trucks will be to travel along Perimeter Road to the traffic circle and turn onto 10th Avenue North. The North (commercial) Gate is approximately $\frac{3}{4}$ mile west along 10th Avenue, close to 57th Street. This haul route is approximately 1-½ miles total from the residential area to the gate.

The concrete foundations and the concrete basement floors will be recycled. As the concrete is removed from the current foundation footprints, it will be loaded into dump trucks and hauled to

an existing stockpile area. The stockpile area is approximately five miles to the southeast of the project area. The haul route will leave the housing area via Plum and Dogwood Streets or 70th Street North and turn onto Perimeter Road heading east. Perimeter Road passes through a traffic circle at 72nd Street north, continues around the north base boundary, and passes around the north end of the runway, ending at Missile Drive. The haul route then leaves Perimeter Road and follows Missile Drive southbound approximately ¾- mile to the existing stockpile area. Miscellaneous soil, asphalt, and concrete are piled separately for reuse. Empty trucks will return to the housing area via the same route.

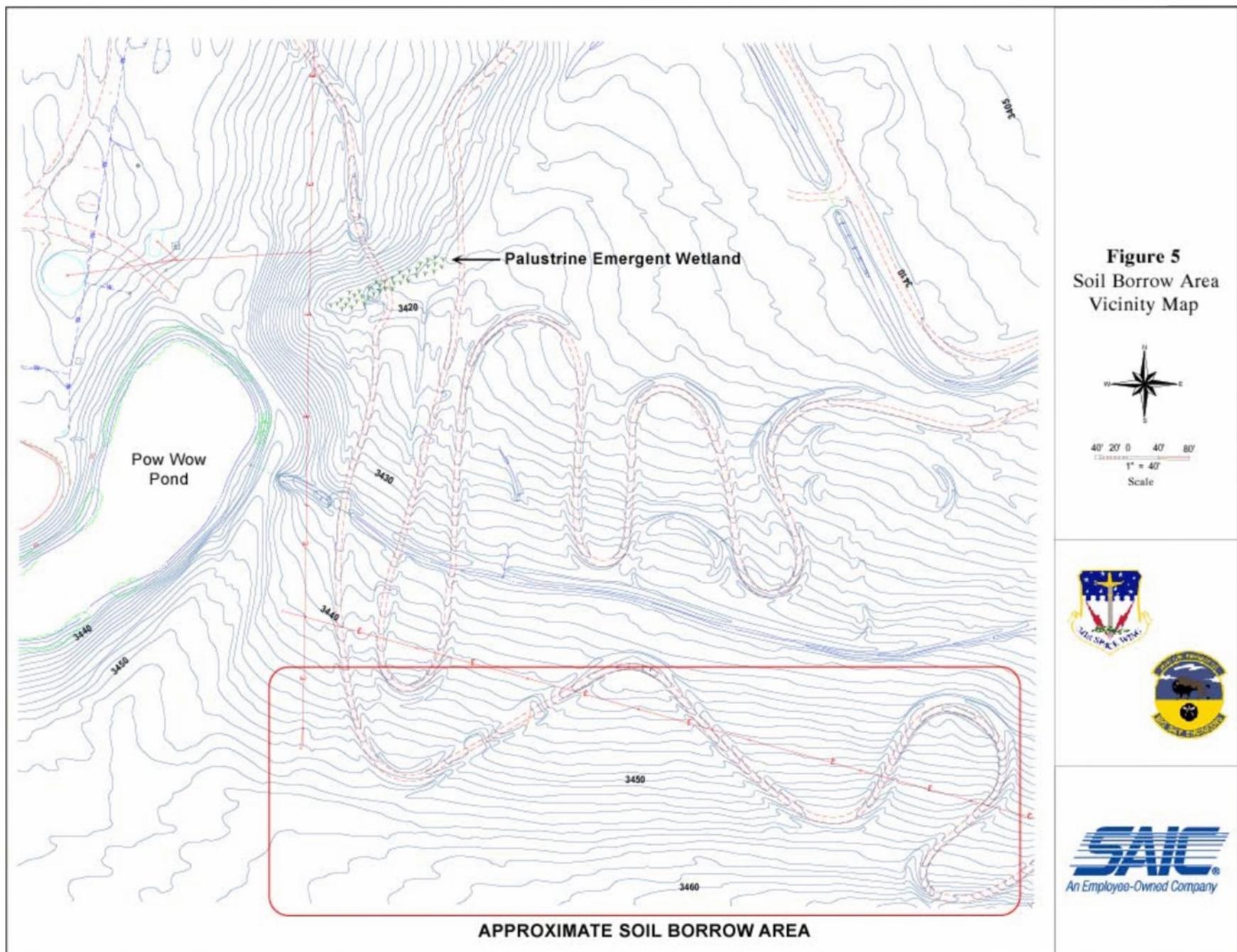
Concrete from the FY 2003 housing replacement project will be stockpiled in this same area. When the Phase IV materials are transported to this stockpile area, a suitable inventory will exist to make concrete crushing economical. A mobile concrete crusher will be brought on-base to complete the crushing project. Concrete will be sorted into three different size grades and stored until a suitable reuse is identified. The steel reinforcing bars will also be stockpiled and recycled.

2.1.3 *Soil Borrow and Backfill*

The current homes all have full basements, thus eight-foot deep holes will remain after foundation demolition. The new homes to be constructed for this project will not have basements, rather they will have four-foot tall crawlspaces. Backfilling the excavation to a four-foot depth will require an average of 530 cubic yards (CY) of soil per structure. To fill the basements of the 51 structures demolished for the Proposed Action, will require approximately 31,000 cubic yards of soil. An additional 16,000 CY of fill soil is needed to elevate each housing site to achieve a 5 percent grade from the house to the street. The Proposed Action includes the excavation and hauling of this soil from a proposed borrow site near the concrete stockpile area (Figures 2 and 5).

The proposed borrow area is rectangular in shape, approximately 300 feet wide and 900 feet long. Excavation of the planned 47,000 CY will remove approximately five feet from the existing profile over the entire 300 x 900 foot plot. The site currently slopes gently downward to the north toward the pond at the Pow Wow Recreation Area, although there is a slight rise between the borrow area and the pond, so storm runoff will not flow directly to the pond. The contractor will scrape off and stockpile the native topsoil prior to fill soil excavation. At the end of the borrow project, the stockpiled topsoil will be redistributed over the open excavation and the area reseeded with native grasses. While the borrow area is active, slopes will be contoured away from Pow Wow Pond and silt fences and other engineering controls will be put in place to minimize storm water runoff impacts.

No special construction equipment is needed. The excavation and hauling project will use earthmovers, bulldozers, front-end loaders, and dump trucks. Assuming a truck/pup combination can haul 20 CY, this will result in 2,350 round trips to haul all 47,000 CY from the borrow area to the housing construction site.



2.1.4 New Home Construction

The Proposed Action includes the construction of 94 new replacement homes: 36 two-bedroom, 42 three-bedroom, and 16 four-bedroom; all two story duplexes. The homes will be built on concrete spread-footing foundations, will be traditional wood-frame structures, and each unit will have an attached carport.

The new homes will include amenities to match the current Air Force Family Housing Guide (Air Force 1995a). These include master bedrooms with $\frac{3}{4}$ -bathrooms, separate living rooms and family rooms, outdoor patios with privacy fencing, and substantial storage area in the carports. All new structures will be built to current building codes.

Electrical, telephone, and cable television service will be reconnected to the new homes. The current water and sewer mains will be abandoned in place, including manholes. New water and sewer mains will be constructed (buried in existing front yards, not disturbing the street pavement) and new services routed and connected to the new homes.

The Proposed Action also includes the continuation of a jogging path to be built during the Phase III (FY 2003) housing replacement project. A “tot lot” playground is currently a bid option for the Phase III construction contract. If the option is not exercised in Phase III, then it may be exercised as part of the Phase IV construction.

Sidewalks are not continuous in all of the neighborhoods. The Proposed Action includes the construction of sidewalks to complete the sidewalk grid in the neighborhoods. In constructing these sidewalks and new driveway curb cuts, all of the existing curbs and gutters will be removed and reconstructed. All roads in the neighborhoods will be chipped and resealed with asphalt emulsion.

2.2 No Action Alternative

The No Action Alternative would result in no construction by the Air Force in the Titan Village and Peacekeeper neighborhoods. The existing housing units would be kept in service even though they do not meet current building or energy codes or current Air Force Family Housing Guidance.

These housing units require substantial routine maintenance in order to keep them livable. The basements in many of these homes have cracked and leaking floors and wall joints which require regular resealing in order to maintain dry conditions. An estimated \$500,000 is spent annually repairing and maintaining the basements of all on-base housing (McLaughlin 2003).

2.3 Alternatives Considered but not Carried Forward

In addition to the Proposed Action and the No Action Alternative, one other alternative (described below) was considered and found to be infeasible and unreasonable; therefore, was eliminated from detailed consideration.

Renovation of Existing Housing

Under this alternative, housing units would be renovated to comply with current Air Force Guidance and current building codes. This would eliminate the need for the soil borrow area.

Each of the housing units would be completely gutted leaving essentially only the wood frame and roof trusses. This action would serve to abate all lead paint and asbestos identified in the Hazardous Building Material Survey (Hart Crowser 2003). The new construction would add new sub-flooring, gypsum wall board, flooring and carpet, piping and plumbing fixtures, electrical wiring and lighting fixtures, cabinets, and finish work.

All of the room layouts would remain the same since the interior bearing and non-bearing walls would not be moved. The renovated homes would not meet current Air Force Family Housing Guidance. Furthermore, a government cost estimate of the renovation project was completed and revealed that the cost of renovation exceeded 70 percent of the replacement value.

According to Air Force guidance, if this occurs, then replacement is the preferred action. This alternative was considered, but eliminated for this reason.

2.4 Environmental Impact Analysis Process

The environmental impact analysis process includes the review of all information pertinent to the Proposed Action and reasonable alternatives and provides a full and fair discussion of potential consequences to the natural and human environment. The process includes involvement with the public and agencies to identify possible consequences of an action, as well as the focusing of analysis on environmental resources potentially affected by the Proposed Action or alternatives.

2.4.1 Scope of Resource Analysis

The Proposed Action would not increase the on-base family housing population, so it would have no impact on long-term traffic, public services, energy, or natural resource consumption. All of the impacts are short-term, construction related impacts and affect only transportation and noise resources. There are no long-term effects on visual, hazardous waste, earth, or water environmental resources. Chapter 3.0 presents the affected environment for air; water; geological; biological; cultural; noise; health, safety and waste management; land use; and socioeconomic and environmental justice. Chapter 4.0 presents the environmental consequences of these environmental resources. At the end of this chapter, a comparison of environmental consequences is presented.

2.4.2 Public and Agency Involvement

The Draft Environmental Assessment, with coordination letters, were sent to the U.S. Fish and Wildlife Service (USFWS), Montana State Historic Preservation Officer, Great Falls City County Planning Board, Montana Department of Environmental Quality, and Montana Department of Fish, Wildlife, & Parks for review and comment. The letters were sent between June 26 and July 2, 2003.

Draft EAs and FONSI's were placed in the Great Falls and Malmstrom AFB libraries on June 26 and 27, 2003 for public review and comment. A notice of availability for the Draft EA was

placed in the Great Falls Tribune (July 1, 2003) and the Malmstrom AFB newspaper, the *High Plains Warrior* (June 27, 2003). Copies of these announcements are included in the Appendix.

Comment letters on the Draft EA were received from Montana Historical Society; Montana Department of Fish, Wildlife, & Parks; Missouri River Conservation Districts Council; Montana Department of Environmental Quality; Cascade County Conservation District; and River's Edge Trail. Copies of these letters are included in the Appendix.

2.4.3 Regulatory Compliance

This EA has been prepared to satisfy the requirements of NEPA (Public Law [P.L.] 91-190, 42 USC 4321 et seq.) as amended in 1975 by P.L. 94-52 and P.L. 94-83. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. In addition, this document was prepared in accordance with AFI 32-7061, which implements Section 102 (2) of NEPA and regulations established by the CEQ (40 CFR 1500-1508) and the Air Force (32 CFR Part 989).

2.4.4 Permit Requirements

This EA has been prepared in compliance with NEPA; other federal statutes, such as the CAA and the CWA; EO's, and applicable state statutes and regulations. Several permits have been identified as necessary for the construction of the Proposed Action; although this permit list is not intended to be complete. It will be the construction contractor's responsibility to secure all necessary permits prior to the start of construction.

- The construction contractor must receive a permit from the State of Montana to discharge construction storm water.
- The construction contractor must also notify the State of Montana (as required under the National Emissions Standards for Hazardous Air Pollutants [NESHAP]) prior to the start of removal activities for asbestos-containing building materials.
- The mobile concrete crusher must have an air quality operating permit prior to the start of crushing operations. Most mobile crushers have their own air quality operating permit.

2.5 Comparison of Alternatives

Table 4 summarizes the potential environmental impacts of the Proposed Action and alternatives, based on the impact analyses presented in Chapter 4.0. In no instance would the potential environmental consequences be significant with the implementation of the Proposed Action or No Action Alternatives.

Table 4: Summary of Potential Environmental Impacts of Proposed Action and No Action Alternatives

Resource	Proposed Action	No Action Alternative
Air Resources	0	0
Water Resources	0	0
Geological Resources	0	0
Biological Resources	0	0
Cultural Resources	0	0
Water Resources	0	0
Noise	-	0
Health, Safety and Waste Management	0	0
Land Use (Transportation)	-	0
Socioeconomics and Environmental Justice	0	0

- = Adverse, but not significant impact

+ = Positive/beneficial impact

0 = No change

3.0 AFFECTED ENVIRONMENT

Based on the characteristics of the Proposed Action (Chapter 2.0), it was determined that the following resources could possibly be affected: air; water; geological; biological; cultural; noise; health, safety, and waste management; land use; and socioeconomic and environmental justice. The existing environmental conditions within the expected geographic extent of potential impacts, known as the region of influence (ROI), are addressed for each environmental resource in this chapter.

3.1 Air Resources

This section describes the existing concentrations of various pollutants and the climatic and meteorological conditions that influence the quality of the air in the area around Malmstrom AFB. Precipitation, wind direction and speed, and atmospheric stability conditions are factors that determine the extent of pollutant dispersion.

The type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional meteorological influences determine air quality. Comparing it to federal and/or state ambient air quality standards determines the significance of a pollutant concentration in a region or geographical area. Under the authority of the CAA, the USEPA has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety.

These federal standards, known as the National Ambient Air Quality Standards (NAAQS), represent the maximum allowable atmospheric concentrations and were developed for six “criteria” pollutants: ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), respirable particulate matter less than 10 micrometers in diameter (PM_{10}), sulfur dioxide (SO_2), and lead (Pb). Based on measured ambient criteria pollutant data, the USEPA designates areas of the U.S. as having air quality equal to or better than the NAAQS (attainment) or worse than the NAAQS (nonattainment). Nonattainment areas that achieve attainment are subsequently redesignated as maintenance areas for a period of 10 or more years. Areas are designated as unclassifiable for a pollutant when there is insufficient ambient air quality data for the USEPA to form a basis of attainment status. For the purpose of applying air quality regulations, unclassifiable areas are treated similar to areas that are in attainment of the NAAQS.

In 1997, the USEPA promulgated two new standards: a new 8-hour O_3 standard (which will eventually replace the existing 1-hour O_3 standard) and a new standard for particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$), which are fine particulates that have not been previously regulated. In addition, the USEPA revised the existing PM_{10} standard. The two new standards are scheduled for implementation over the next few years, as monitoring data become available to determine the attainment status of areas in the U.S. Meanwhile, the USEPA will enforce the existing 1-hour O_3 standard for areas that are still in nonattainment of the standard.

Under the CAA, state and local agencies may establish AAQS and regulations of their own, provided these are at least as stringent as the federal requirements. For selected criteria pollutants, the State of Montana has established its state AAQS, some of which are more stringent than the federal standards. Montana AAQS are more restrictive than federal standards

for CO, NO₂, O₃, and SO₂. Montana does not have state standards for PM_{2.5}. In addition, Montana regulates emissions of settleable particulates, visibility, fluoride in foliage, and hydrogen sulfide (H₂S), for each of which no federal standards exist. A summary of the federal and Montana AAQS that apply to the proposed project area is presented in Table 5.

Table 5: Montana and Federal Ambient Air Quality Standards

Air Pollutant	Averaging Time	Montana AAQS	Federal (NAAQS)	
			Primary	Secondary
Carbon Monoxide (CO)	8-hour	9 ppm	9 ppm	---
	1-hour	23 ppm	35 ppm	---
Nitrogen Dioxide (NO ₂)	AAM	0.05 ppm	0.053 ppm	0.053 ppm
	1-hour	0.30 ppm	---	---
Sulfur Dioxide (SO ₂)	AAM	0.02 ppm	0.030 ppm	---
	24-hour	0.10 ppm	0.14 ppm	---
	3-hour	---	---	0.50 ppm
	1-hour	0.50 ppm	---	---
Particulate Matter (PM ₁₀)	AAM	50 µg/m ³	50 µg/m ³	50 µg/m ³
	24-hr	150 µg/m ³	150 µg/m ³	150 µg/m ³
Particulate Matter (PM _{2.5}) ^(a)	AAM	---	15 µg/m ³	15 µg/m ³
	24-hour	---	65 µg/m ³	65 µg/m ³
Ozone (O ₃) ^(b)	1-hour	0.10 ppm	0.12 ppm	0.12 ppm
	8-hour	---	0.08 ppm	0.08 ppm
Lead (Pb) and Lead Compounds	Calendar Quarter 90-days	---	1.5 µg/m ³	1.5 µg/m ³
Settleable Particulates (TSP)	30-day	10 g/m ²	---	---
Hydrogen sulfide (H ₂ S)	1-hr	0.010 ppm	---	---
Fluoride in foliage	1-month	50 µg/g	---	---
	grazing season	35 µg/g	---	---
Visibility	AAM	3 x 10 ⁻⁵ /m	---	---

Notes: AAM = Annual Arithmetic Mean; AGM = Annual Geometric Mean.

ppm = parts per million; µg/m³ = micrograms per cubic meter.

(a) The PM_{2.5} standard (particulate matter with a 2.5-micron diameter) was promulgated in 1997, and will be implemented over an extended time frame. Areas will not be designated as in attainment or nonattainment of the PM_{2.5} standard until the 2003 – 2005 timeframe.

(b) The 8-hour Ozone standard was promulgated in 1997, and will eventually replace the 1-hour standard. The USEPA plans to implement this standard beginning in 2004. During the interim, the 1-hour ozone standard will continue to apply to areas not attaining it.

Sources: §40 CFR 50; United States Forest Service 2000, ARM 17.8.

For non-attainment regions, the states are required to develop a State Implementation Plan (SIP) designed to eliminate or reduce the severity and number of NAAQS violations, with an underlying goal to bring state air quality conditions into (and maintain) compliance with the NAAQS by specific deadlines.

Section 162 of the CAA further established a national goal of preventing degradation or impairment in federally designated Class I areas. Class I areas are defined as those areas where any appreciable degradation in air quality or associated visibility impairment is considered significant. As part of the Prevention of Significant Deterioration (PSD) program, Congress

assigned mandatory Class I status to all national parks, national wilderness areas (excluding wilderness study areas or wild and scenic rivers), and memorial parks greater than 5,000 acres. Class II areas are those where moderate, well-controlled growth could be permitted. Class III areas are those designated by the governor of a state as requiring less protection than Class II areas. No Class III areas have yet been so designated. The PSD requirements affect construction of new major stationary sources in the PSD Class I, II, and III areas.

CAA Section 169A established the additional goal of prevention of further visibility impairment in the PSD Class I areas. Visibility impairment is defined as a reduction in the visual range and atmospheric discoloration. Determination of the significance of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The USEPA is implementing a Regional Haze rule for PSD Class I areas that will also address contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility may potentially result from elevated concentrations of PM₁₀ and SO₂ in the lower atmosphere.

CAA Section 176(c), General Conformity, established certain statutory requirements for federal agencies with proposed federal activities to demonstrate conformity of the proposed activities with the each state's SIP for attainment of the NAAQS. In 1993, the USEPA issued the final rules for determining air quality conformity. Federal activities must not:

- cause or contribute to any new violation;
- increase the frequency or severity of any existing violation; or
- delay timely attainment of any standard, interim emission reductions, or milestones in conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS violations or achieving attainment of NAAQS.

General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual thresholds identified in the rule, a conformity determination is required of that action. The thresholds become more restrictive as the severity of the nonattainment status of the region increases.

3.1.1 Climatology and Meteorology

Malmstrom AFB, located in north central Montana, is on the dry eastern side of the Rocky Mountains and has a modified semiarid continental type climate. Summertime is generally pleasant, with cool nights, moderately warm and sunny days, and very little hot, humid weather. Winters are milder than would be expected of a continental location at this latitude because of the frequent occurrence of warm down slope winds (Chinooks) that produce temperature changes of 40 degrees Fahrenheit (° F) or greater in 24 hours (Air Force 1998). July is generally the warmest month, with a mean daily high temperature of 83.6° F. January is usually the coldest month, with a mean daily low temperature of 12.5° F. The growing season averages 135 days per year (Air Force 1999).

Humidity and precipitation are usually low, with associated large fluctuations in daily and seasonal temperatures. Average annual precipitation is 15 inches. Most of the precipitation that occurs during the late fall, winter, and early spring falls as snow, but Chinook winds prevent

large accumulations (Air Force 1998). Average annual snowfall is 43.6 inches (Air Force 2000). The prevailing winds are from the southwest year round and are generally moderate with speeds exceeding 25 mph only two percent of the time (Air Force 1999).

Based on the average annual precipitation, the area would normally be classified as semi-arid, but about 70 percent of the annual rainfall typically occurs during the April to September growing season, so the climate is favorable for dry land farming (Air Force 1998). Table 6 presents average monthly temperatures, precipitation, humidity, and wind speed data from the nearest National Weather Service station in Great Falls, Montana (Air Force 1999).

Table 6: Climate Data for Great Falls, MT

Month	Temperature		Precipitation		Relative Humidity ¹	Wind	
	Mean Daily Max °C (°F)	Mean Daily Min °C (°F)	Mean Total cm (in)	Mean Snow cm (in)		Mean Speed m/s (mph) ²	Prevailing Direction
January	-0.5 (31.1)	-10.8 (12.5)	2.56 (.81)	25.1 (9.9)	62	6.8 (15.3)	SW
February	2.3 (36.2)	-8.7 (16.3)	1.70 (0.67)	21.6 (8.5)	55	6.4 (14.3)	SW
March	5.8 (42.5)	-5.5 (22.1)	2.56 (1.01)	26.4 (10.4)	55	5.8 (13.0)	SW
April	12.9 (55.2)	0.2 (32.4)	3.15 (1.24)	18.5 (7.3)	44	5.1 (12.9)	SW
May	18.4 (65.1)	5.3 (41.4)	6.25 (2.46)	4.6 (1.8)	46	5.0 (11.4)	SW
June	22.9 (73.3)	9.5 (49.1)	6.75 (2.66)	0.8 (0.3)	44	4.5 (11.2)	SW
July	28.7 (83.6)	12.7 (54.9)	3.23 (1.27)	Trace	37	4.6 (10.1)	SW
August	27.6 (81.6)	11.9 (53.4)	3.40 (1.34)	Trace	39	5.1 (10.2)	SW
September	21 (69.8)	7.1 (44.7)	3.15 (1.24)	4.1 (1.6)	46	5.9 (11.3)	SW
October	15.1 (59.2)	2.6 (36.7)	1.96 (0.77)	7.9 (3.1)	46	6.5 (13.2)	SW
November	6.4 (43.6)	-3.7 (25.3)	1.82 (0.72)	19.1 (7.5)	54	7.0 (14.6)	SW
December	1.7 (35.0)	-8.2 (17.3)	1.85 (0.73)	22.6 (8.9)	60	7.4 (15.6)	SW
Annual	13.6 (56.4)	0.99 (33.8)	37.90 (14.9)	150.6 (59.3)	50	5.7 (12.8)	SW

Notes: 1. Relative humidity measured at 11:00 a.m.

2. Wind speed based on 1941-90 period; prevailing direction through 1963.

Source: Bair 1992.

3.1.2 Air Quality

The Proposed Action would occur within Cascade County, Montana. According to federally published attainment status for Montana in §40 CFR 81, Cascade County is designated as in attainment, better than the national standards, or unclassified for CO, NO₂, SO₂, PM₁₀, O₃, and Pb. Based on recent monitoring data, the USEPA projects that Cascade County will be in attainment of the new 8-hour ozone and PM_{2.5} NAAQS when designations are made in 2004 or 2005 (USEPA 2002a). Monitoring data in Cascade County indicate generally good air quality.

The City of Great Falls has a small area located along 10th Avenue South that had previously been classified as nonattainment or unclassifiable for CO. This area was redesignated as attainment on July 8, 2002, and is now considered to be a maintenance area for CO (USEPA 2002b). With the redesignation, the area is subject to a limited maintenance plan until 2012, after which it must submit a revised maintenance plan to last another 10 years (MDEQ 2000). If no exceedances of the CO standard occur within the next 20 years, the area may apply for full attainment status. Until that time, General Conformity must be evaluated for all proposed federal actions within the maintenance area. Because Malmstrom AFB is not located within the maintenance area, a General Conformity evaluation is not required (MDEQ 2003).

Malmstrom AFB is located in Montana Air Quality Control Region (AQCR) 141, which covers north central Montana. Mandatory federal Class I areas for the state of Montana are listed under 40 CFR 81. The mandatory federal class I areas closest to Malmstrom AFB are:

- Scapegoat Wilderness, a 239,936-acre region within the Helena National Forest, located 66 miles southwest of Malmstrom AFB.
- Bob Marshall Wilderness, a 1,1019,356-acre region within the Lewis & Clark and Helena National Forests, located 75 miles west of Malmstrom AFB.
- Gates of the Mountain Wilderness, a 28,936-acre region within the Helena National Forest, located 50 miles southwest of Malmstrom AFB.

Emissions at military installations generally include CO, volatile organic compounds (VOCs), nitrogen oxides (NO_x, commonly measured as nitrogen dioxide), sulfur oxides (SO_x, commonly measured as sulfur dioxide), and PM₁₀. Although O₃ is considered a criteria pollutant and is measurable in the atmosphere, it is not often considered a pollutant when reporting emissions from specific sources. O₃ is not typically emitted directly from most emissions sources; it is formed in the atmosphere from its precursors (NO_x and VOCs), which are directly emitted from various sources. Thus, NO_x and VOCs are commonly reported instead of O₃. Sources of pollutants include stationary sources (fossil fuel combustion and fuel or solvent evaporation), construction activities, and mobile sources.

3.2 Water Resources

Water resources consist of groundwater and surface water. The ROI for water resources is considered to be within the limits of Malmstrom AFB. Located on a plateau with drainage northward toward the Missouri River, drainage features in the study area are primarily ephemeral streams and coulees. Potable groundwater is present at depths greater than 100 feet below ground surface. All water used at Malmstrom AFB is supplied by the City of Great Falls and is treated surface water from the Missouri River.

3.2.1 *Groundwater*

Groundwater resources exist in the project area and occur primarily in deep, confined aquifers (e.g., the Madison-Swift aquifer). The depth to these deep aquifers ranges between about 100 feet and 200 feet below land surface at the base. Shallow groundwater (less than about 25 to 40 feet below land surface) occurs locally as noncontiguous, unconfined, perched zones. The deep confined aquifers in the area tend to flow northward; flow in the shallow, unconfined aquifers typically follows topographic gradients.

The deep Madison-Swift aquifer has the greatest potential for future groundwater development. Because of the limited supply of water and discontinuous nature of the shallow perched zones, they are unlikely to be used as a water source in the future. Due to the ample surface water supply and the depth of most of the aquifers, groundwater resources have not been developed on the base.

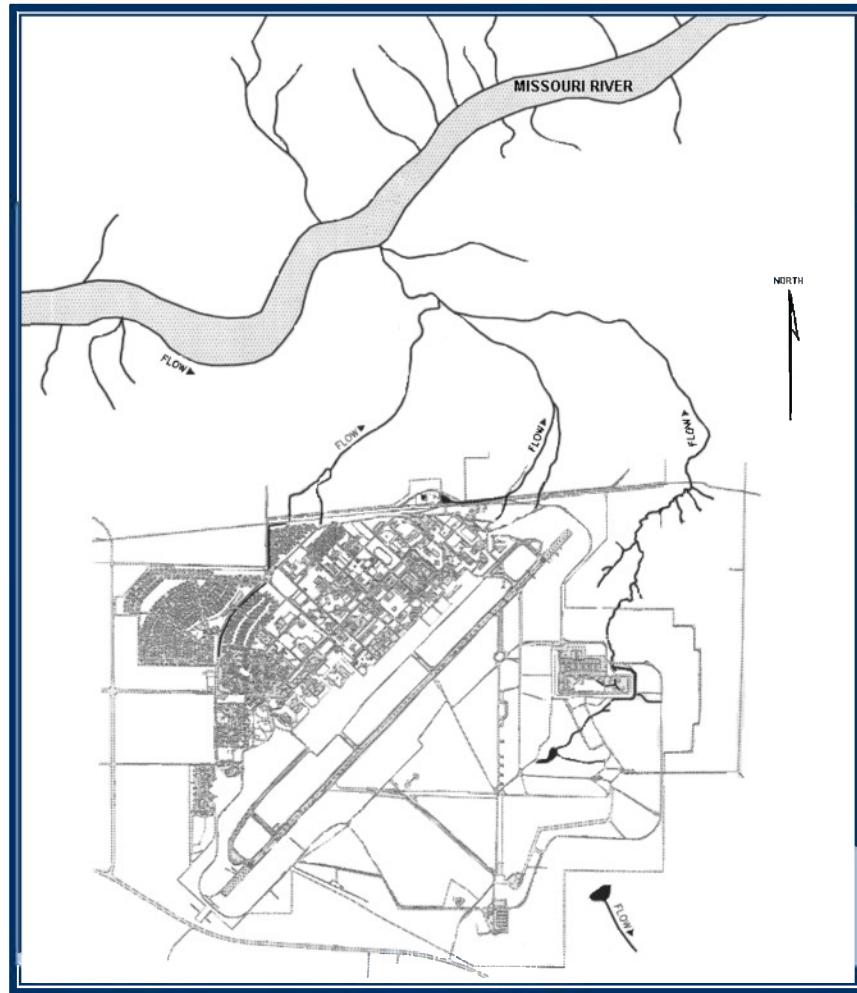
3.2.2 *Surface Water*

The Missouri River is located about one mile north of the base and serves as the principal source of potable water for Malmstrom AFB and the City of Great Falls. The USFWS has classified the Missouri River as a Wild and Scenic River from the confluence with the Teton River, which is 50 miles northeast and downstream of Malmstrom AFB, to the confluence of the Musselshell River, 150 miles further downstream and to the east of Malmstrom AFB.

Surface water drainage at the site occurs primarily in ephemeral streams and coulees (Figure 6). There are no perennial streams present on the base. Stormwater drainage from Malmstrom AFB flows through a system of underground pipes, ditches, swales, and natural drainages within agricultural land north of the base to the Missouri River.

Pow Wow Recreation Area, just west of the proposed borrow area, has a pond that drains to the northeast toward the Missouri River.

Figure 6: Surface Water Drainage Patterns at Malmstrom AFB



3.3 Geological Resources

Geological resources include geology, seismicity, and soils. The ROI for geological resources is considered to be within Malmstrom AFB boundaries.

Malmstrom AFB is located in a glaciated portion of the Missouri Plateau which is in the northern part of the Great Plains Province. The site is underlain by the Sweetgrass Arch, a bedrock structural feature extending northwest between the Little Belt Mountains, 24 miles to the south, past the base on the southwestern side and into Alberta, Canada. Stratigraphic units important to the framework of the region surrounding Malmstrom AFB range in age from the Madison Limestone of the Mississippian era (360 million years) to the Eolian Sand of the Holocene (10,000 years). These units include sedimentary bedrock formations, unconsolidated glacial deposits, and windblown deposits.

The occurrence of geologic hazards in the study area is low. Widely scattered, low-level seismicity characterizes the area. No active faults are near the project area or Malmstrom AFB and the proposed construction sites do not include significant areas of steep slopes.

In the vicinity of Malmstrom AFB, Quaternary glacial deposits overlie Early Cretaceous shale and sandstone formations. The modern soils of Malmstrom AFB have developed directly on these Quaternary deposits and consist primarily of Lawther silty clay (associated with the Pleistocene till) and Dooley sandy loam (associated with the Holocene eolian sand) (Soil Conservation Service 1982). These two series encompass approximately 75 percent of the base. Other soils on base include sandy loams, loamy sands, and alluvial silty clay loams. Most of the soils on Malmstrom AFB are not highly subject to wind or water erosion.

3.4 Biological Resources

Biological resources of the region provide economic, social, cultural, and environmental value. The plants, animals, and land in the vicinity of Malmstrom AFB are important for biological productivity and landscape continuity.

3.4.1 Vegetation, Wetlands, and Floodplains

Malmstrom AFB is located on a high plateau approximately one mile south of the Missouri River and is approximately 100 feet above the 100-year floodplain of the river (Air Force 1998). The base is located on flat to gently rolling terrain in the Shortgrass Prairie region of the U.S. Most indigenous vegetation within the boundaries of the base and in the general vicinity has been replaced with exotic and weedy species over the past 60 years of site development. Some noxious weed populations of spotted knapweed, Canada thistle, and field bindweed are known to occur on the base (Air Force 2001a). Malmstrom AFB is bordered on the north, east, and south sides by agricultural and pasture lands, with mixed commercial, industrial, residential, and open land uses to the west and northwest (Air Force 2001a).

Currently the vegetation is a mix of introduced grass species with a low percentage of native grasses of a mixed-grass steppe. Approximately 36 acres of wetlands (wet areas and moist seeps) were identified on Malmstrom AFB and range from standing water (Pow Wow Pond) to streambeds that flow only after heavy precipitation (Air Force 2001a). In most cases, these were man-made wet areas. Based on a wetlands delineation of the project area, no wet areas or wetland vegetation are present within the residential area of the proposed action (Hydrometrics, Inc. 2001).

Near the proposed soil borrow area, woody vegetation, such as willows, is rare except along portions of Pow Wow Pond (located approximately 150 feet northwest of the proposed borrow area. An excavated ditch with ephemeral base stormwater flow occurs approximately 100 feet north of the proposed borrow area. This has been identified as a palustrine emergent wetland in the Malmstrom Air Force Base Wetland Delineation report (Hydrometrics, Inc. 2001). There are no other ditches or creeks and no evidence of seeps or springs in the project area.

No threatened or endangered plant species have been identified in the study area (Air Force 1994a; Montana Natural Heritage Program [NHP] 2003).

3.4.2 Wildlife

Effective wildlife habitat is limited in the study area by the relatively large portion of land used for buildings, runways, and other base facilities (Air Force 2001a). Bird species of greatest abundance include a variety of songbirds, shorebirds, raptors, and waterfowl. Common mammals include deer, fox, white-tailed jackrabbit, badger, skunk, ground squirrels, and field mice. There may be transient use of the area by coyotes (Air Force 2001a). Pow Wow Pond does not contain native fish, but contains stocked rainbow trout, crawfish, turtles, and (introduced) goldfish (Verzuh 2003b).

The vegetated swales of the borrow pit area may be used for resting and foraging by local birds or as migratory pathways for passerines (perching birds and songbirds such as the jays, blackbirds, finches warblers, and sparrows) (Wetlands West, Inc. 2000). No important habitat for general wildlife species is present within the project area.

No federally listed threatened or endangered species occur on Malmstrom AFB (Montana NHP 2003). Two federal-candidate bird species (ferruginous hawk and Swainson's hawk) and one state-recognized species (the upland sandpiper) may be migrants to the study area. Threatened or endangered wildlife species do not impose a constraint to development on Malmstrom AFB (Air Force 1998).

3.5 Cultural Resources

Cultural resources are prehistoric and historic districts, sites, structures, artifacts, and any other physical evidence of human activities considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources are typically divided into three major categories: archaeological resources, architectural/engineering resources, and traditional resources.

Archaeological resources are locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains (e.g., arrowheads, bottles). Architectural/engineering resources include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance. They generally must be more than 50 years old to be considered for inclusion in the NRHP. Traditional resources are associated with cultural practices and beliefs of a living community that are rooted in its history and are important in maintaining the continuing cultural identity of the community. They may include archaeological resources, locations of historic events, sacred areas, sources of raw materials, topographic features, traditional hunting or gathering areas, and native plants or animals. Significant cultural resources are evaluated for adverse impacts from a federal undertaking. Significant cultural resources are generally those that are eligible or potentially eligible for inclusion in the NRHP. Traditional resources also may be identified as significant by Native American or other ethnic groups. The ROI for cultural resources consists of Malmstrom AFB. The area of potential effect (APE) consists of the housing areas to be demolished, the haul route, the borrow area where fill dirt will be obtained, and the concrete stockpile.

3.5.1 Historical Setting

Cultural frameworks for the region have been developed by Mulloy, Wedel, Frison and others (Air Force 1995b), defining three major periods of human culture prior to contact with Euro-Americans. The people from the earliest period, from as long ago as 12,000 years to about 7,000 years ago, lived by hunting large game such as the now-extinct mammoth, and later deer, bison and smaller mammals. They used distinctive lanceolate spear points known as Clovis, Folsom and Plainview (Air Force 1995b). Archaeological evidence from this period in the vicinity of Malmstrom AFB is usually in the form of surface sites or isolated finds, and there is little evidence for other aspects of their culture.

During the middle period, from about 7,000 to 1,500 years ago, there is evidence that bison were an important part of the economy, as well as remains of activities other than hunting, including plant collection, cooking, and food storage. Archaeological sites include a variety of projectile points, ground stone tools, and in the latter part of this period, ceramics (Air Force 1995b). In the vicinity of Malmstrom AFB, archaeological sites are found both on the surface and buried. However, the deposition on-base precludes material being deeply buried.

In the most recent period prior to contact with Euro-Americans, from about 1,500 to 300 years ago (about A.D. 1700), the variety of projectile points increases and pottery is more evident. Bison were still an important component on the economy, and stone circles are a distinctive type of site associated with this period. During the 18th century, prior to face-to-face contact, horses and trade goods such as beads and metal points made their way to this region through trade (Air Force 1995b). When Euro-Americans contacted the Native Americans of this region, they identified Blackfoot, Crow, Plains Cree, Gros Ventre, Teton Dakota, and Assinboine (Air Force 1995b) living a highly mobile life centered around bison hunting during the warm part of the year and village dwelling in sheltered areas such as river valleys during the cold seasons. Use of tipis and horses helped make this possible.

French and British fur traders had come through the upper Missouri River area prior to Lewis and Clark's Voyage of Discovery, but in 1805 this expedition's portage around the Great Falls probably took them across what is now Malmstrom AFB. Their route went between Belt Creek and a point upstream of the City of Great Falls. This exploration presaged later settlements, including Fort Benton to the northeast of the base during the first half of the 19th century (Air Force 1995b). Forts and trading posts were followed by gold prospectors in the 1850s and 1860s, and then cattle ranching in the period between 1860 and 1880. The severe winter of 1886-1887 set the stage for sheep ranching to follow cattle ranching as the dominant industry, capped by the Great Northern Railroad reaching Great Falls in 1893. Between 1890 and 1910, homesteading increased, with the accompanying grain production contributing to the economy (Air Force 1995b). The Chicago, Milwaukee, St. Paul, and Pacific Railroad ("Milwaukee Road") came to Montana, passing through Great Falls in 1909 (Montana Historical Society 2003); remnants of this route now form part of the northern border of Malmstrom AFB.

Malmstrom AFB traces its beginnings back to 1939 when World War II broke out in Europe. Concern about the war caused the local Chamber of Commerce to contact two Montana senators, Burton K. Wheeler and James E. Murray and request they consider development of a military installation in Great Falls. In November 1942, a survey team evaluated an area near the Green Mill Dance Club and Rainbow Dam Road approximately six miles east of Great Falls. Great Falls, along with ten other northern tier sparsely populated sites, was considered for a heavy

bomber-training base. Construction began on Great Falls Army Air Base on June 8, 1942. The base was informally known as East Base since the 7th Ferrying Group was stationed at the municipal airport on Gore Hill. Its mission was to establish an air route between Great Falls and Ladd Field, Fairbanks, Alaska, as part of the United States Lend-Lease Program that supplied the Soviet Union with aircraft and supplies needed to fight the German Army.

Great Falls Army Air Base was assigned to 2nd Air Force and the first B-17 Flying Fortress landed on November 30, 1942. Four Bombardment Groups, the 2nd, 385th, 390th, and 401st, trained at Great Falls from November 1942 to October 1943. Group Headquarters and one of the Groups' four squadrons were stationed in Great Falls with the other squadrons stationed at Cut Bank, Glasgow, and Lewistown, Montana. Aircraft would take off at a predetermined time, form up in squadron formation over their respective location, and later, over central Montana, join up in group formation. These bombardment groups went on to participate in decisive raids over Germany, opening the door for Allied daylight precision bombing.

Upon completion of the B-17 training program, in October 1943, Great Falls Army Air Base was transferred to the Air Transport Command and units from Gore Field transferred to the base. More buildings were constructed this year, including a consolidated mess, a Post Exchange, a theater, and a 400-bed hospital. Moreover, the Lend Lease Program continued which included P-39, C-47, B-25, and A-20 aircraft. B-25 Mitchell Bombers arrived by rail and were assembled on base, others were flown in by both military and Women Air Force Service Pilots. These aircraft were later flown by U.S. pilots by way of the Alaskan-Siberian Route through Canada, to Fairbanks, Alaska, and transferred to Russian pilots who in turn flew them into Siberia. A total of 1,717,712 pounds of cargo containing aircraft parts, tools, miscellaneous equipment, explosives, and medical supplies were shipped through Great Falls Army Air Base to Russia. Aircraft shipments to the Soviet Union stopped in September 1945, when World War II ended, with approximately 8,000 aircraft having been processed in a 21-month period.

Following World War II, Great Falls Army Air Base assumed a support mission for military personnel assigned to Alaskan military installations. A reserve training unit was established here for the 4th Air Force from October 10, 1946, to March 6, 1947. In September 1947, the Air Force became a separate service and the base's name changed to Great Falls AFB. The Cold War heated up when the Soviet Union closed all land travel between West Germany and West Berlin. The U.S. and Britain vowed not to abandon West Berliners to the Berlin Blockade. On June 25, 1948 "Operation Vittles," the strategic airlift of supplies to Berlin's 2,000,000 inhabitants, was initiated. Great Falls AFB played a critical role in assuring the success of this vital operation. Officials selected the base as the only replacement aircrew training site for Berlin Airlift-bound C-54s, officially activating the 517th Air Transport Wing. Using radio beacons, Great Falls AFB was transformed to resemble Tempelhof Airport in Berlin, Germany. Hundreds of pilots and Flight Engineers, many of whom were recalled to active duty, were qualified on the C-54 aircraft and on flight procedures to and from Berlin by practicing on ground mock-ups and flying simulated airlift missions. Later, the 517th Air Transport Wing was redesignated the 1701st Air Transport Wing. This wing's primary mission was the routing and scheduling of flights throughout the Pacific Ocean region and in support of allied forces in the Korean Conflict. The Military Air Transport Service reopened the C-54 Flight Training School as the 1272nd Medium Transition Training Unit in May 1950, one month before the Korean War

began. The 1701st ATW was later replaced by the 1300th Air Base Wing and the 582nd Air Resupply and Communications Squadron.

Great Falls AFB also played a major aerial defense role in North American Air Defense mission. The 29th Air Division activated at Great Falls AFB in early 1950, bringing with them fighter interceptor squadrons, an aircraft control and warning squadron, and ground observer detachments. The 29th Fighter Interceptor Squadron activated in 1953 and remained at Great Falls until 1968. The North American Aerospace Defense Command (NORAD) was created in 1957. Malmstrom AFB was responsible for the 24th NORAD region, which covered the western half of North America. This was comprised of four fighter/interceptor squadrons and radar sites stretching from the Rocky Mountains, halfway across North Dakota and north to the north border of Canada. The 24th also served as the NORAD alternate command post, which remained active until 1983.

In 1954, the base was aligned under Strategic Air Command and the 407th Strategic Fighter Wing was assigned to Great Falls AFB. The Wing's F-84 fighters and KB-29 air refuelers were to provide fighter escort for Strategic Air Command's long-range B-36 bombers. On August 21 of that year, the 407th Strategic Fighter Wing Vice Commander, Colonel Einar Axel Malmstrom, died when his T-33 crashed approximately one mile west of the airport at Gore Field. Although his tenure was short, he was well liked by the local community. It was the local civilian community that led the efforts to rename Great Falls AFB for Colonel Malmstrom. On June 15th, 1956, the base was officially dedicated as Malmstrom AFB.

The 341st Strategic Missile Wing was activated at Malmstrom AFB on July 15, 1961. Construction of the wing's first launch facility began in March 1961 and was completed in December. The 10th Strategic Missile Squadron was activated November 1, 1961 and Alpha-01, the first launch control facility, was completed in July 1962. The base was an important player during the Cuban Missile Crisis. Missiles formed an important part of the Malmstrom AFB mission, but over the years other aspects have been added. The 301st Air Refueling Wing was activated at Malmstrom AFB in 1988. Headquarters Air Force redesignated the 341st Strategic Missile Wing as the 341st Missile Wing in September 1991. In July 1994, Air Force Space Command took over as the Major Command replacing Air Mobility Command.

Malmstrom AFB now hosts the 819th Rapid Engineer Deployable Heavy Operational Repair Squadron, Engineer (RED HORSE) squadron. RED HORSE is the first Active Duty and Air National Guard associate unit in the Air Force. The 341st Missile Wing was redesignated the 341st Space Wing in 1997 and in January 1998, Malmstrom received another mission, the Passive Space Surveillance Network Operations Center. The center provides support to United States Space Command missions, specifically space track data on near earth and deep space satellites.

3.5.2 Identified Cultural Resources

A search of the National Register Information System database shows that no NRHP-listed resources are located on Malmstrom AFB, although the City of Great Falls is home to a number of NRHP-listed historic buildings.

Three archaeological and historic resources surveys have been conducted on Malmstrom AFB proper (Air Force 2001a). In 1988, Historical Research Associates conducted a survey that included areas near the proposed borrow site. A segment of the Chicago, Milwaukee, St. Paul, and Pacific Railroad (assigned site number 24CA 264) (now Burlington Northern Santa Fe) traverses the northern border of the base. An archaeological site in the southern part of the base is considered to be not eligible for the NRHP because of limited information potential. With the exception of isolated finds that are also not eligible for the NRHP, no other cultural resources were identified within Malmstrom AFB. The railroad segment may be eligible for the NRHP based on its role in the Euro-American settlement of the region (Air Force 1995b), but it is outside the APE.

Malmstrom AFB conducted an architectural inventory in 1996 to identify Cold War resources. Among the buildings identified for documentation and evaluation were two houses in the proposed project area. These are examples of the Capehart housing built after World War II to alleviate a severe housing shortage on military bases across the country. The second of two programs designed to address this problem, Capehart housing generally succeeded Wherry housing (both programs were named after their U.S. senator sponsors). The developer-owned, multi-unit Wherry housing often had shoddy construction; there are currently 86 examples of this housing type on Malmstrom AFB (Malmstrom AFB 1997). Capehart housing was designed to address the flaws in the Wherry program: houses were larger, owned by the government, and constructed to more exacting standards. There are 357 two-family and single-family Capehart units on Malmstrom AFB, built between 1959 and 1963 (Malmstrom AFB 1997). The two units documented as part of the inventory were both built in 1959. The inventory concluded

...the houses themselves are extremely common and even in their day were considered a “stop-gap” measure to prevent declining morale and readiness. They came at a time of experimentation in mass housing and there is virtually nothing to distinguish these houses architecturally from thousands of others just like them that dot the American landscape. The Wherry and Capehart housing units at Malmstrom are typical examples of both multi-unit and single-family detached housing of the 1950s and 1960s and all are illustrative of cost saving devices used during that period. Their floor plans are common and are of the type found in countless neighborhoods across the country. These housing units are not linked to a significant architect, builder, or developer. Malmstrom housing should not be considered exceptionally historically significant and does not merit consideration for listing in the NRHP. [CH2MHill 1997].

The base came to the same conclusion in the Integrated Natural Resource Management Plan, finding the housing “not of exceptional importance relative to the base or national Cold War mission” and as a result “considered ineligible for listing in the NRHP” (Air Force 2001a).

The inventory also identified one building that is eligible for the NRHP: although considered eligible, it is not listed on the NRHP. Twelve buildings are potentially eligible (Malmstrom AFB 1997; Air Force 2001a) (Table 7). The eligible building, Building 1700, was a fighter crew and aircraft alert facility, built in 1956; it is currently used for storage. It lies at the northeast end of the flight line. The potentially eligible buildings, built between 1953 and 1977 originally had a variety of functions related to the Cold War, including storage, administration, command, training, maintenance, aircraft hangars, and a fire station. Although some of the buildings’

functions have changed, they are all currently in use. These structures are located southwest of Building 1700, along the flight line. None of these facilities are within the APE of the Proposed Action (i.e., none are within construction, demolition, storage or other areas that are part of this project).

Table 7: Cold War Facilities at Malmstrom AFB

Facility	Year Built	Current Use	Historical Use	Official NRHP Determination
Building 160 Nutter Hall	1957	819 Red Horse Squadron HQ	341 Missile Wing HQ & Command Post	
Building 219 Aircraft Hangar	1959	Missile Trainer	Fighter/Interceptor Aircraft Hangar	
Building 250	1959	Administrative	KC-97 & KC-135 Tanker Alert Crew Facility	
Building 300	1958	Communications Squadron Administrative Facility	KC-97 Operations facility; Security Forces HQ - combat weapons support & training; Refueling Group HQ	
Building 349	1957	Fire Station	Fire Station	
Building 400	1959	Supply Warehouse	Supply Warehouse	
Building 500	1959	341 Space Wing HQ, Operations Group HQ	Semiautomatic Ground Environment (SAGE) Complex & NORAD HQ	
Building 1460	1959	819 RHS equipment storage	KC-97 Tanker Aircraft Nose Dock	
Building 1464	1959	819 RHS equipment storage	Aircraft maintenance hangar	
Building 1700	1959	Storage	Fighter crew and aircraft alert facility	Eligible
Building 1705	1958	Shop & Administrative space for facility maintenance contractor	Missile storage and maintenance	
Building 1708 Lloyd Hughes Hall	1957	Aircraft crew alert facility and fighter operations building	Administrative space for Missile Engineering and Environmental Flight	
Building 1710 T-9 Trainer	1977	Missile Launch Facility trainer	Missile Launch Facility trainer	

Source: CH2MHill 1997.

Significant paleontological resources do occur in Montana, mostly in surface to near-surface bedrock. However, the project area and Malmstrom AFB are underlain by 30 to 100 feet of glacial sediments, which do not tend to produce paleontological finds, and none have been found on the base (Air Force 2001a). Upland areas, on which the project area and base are located, also have a lower potential for cultural and historic sites than riparian areas.

3.6 Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a ten-fold increase in acoustic energy, while 20 dB is 100 times more intense, 30 dB is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities.

There are several methods of characterizing sound. The most commonly used is the *A-weighted sound level* or *dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period, a method for describing either the average character of the sound or the statistical behavior of the variations must be used. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq} . The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night – because excessive noise interferes with the ability to sleep – 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Day/Night Average Sound Level, or L_{dn}* , is a measure of the cumulative noise exposure in a community, with a 10 dB addition to nocturnal (10:00 p.m. to 7:00 a.m.) noise levels. Table 8 categorizes the typical range of L_{dn} levels for neighborhoods.

Table 8: Typical Day-Night Noise Levels in Urban Areas in the U.S.

Description	Typical Range of L_{dn} (dB)	Average L_{dn} (dB)
Quiet suburban residential	48-52	50
Normal suburban residential	53-57	55
Urban residential	58-62	60
Noisy urban residential	63-67	65
Very noisy urban residential	68-72	70

Source: U.S. Environmental Protection Agency 1974.

Two project areas are included in this analysis; the residential area where housing demolition and construction will occur and the concrete stockpile/soil borrow area. The most recent Air Installation Compatible Use Zone (AICUZ) analysis was completed in 1994 (Air Force 1994b),

when the 341st Air Refueling Group (ARG) was still assigned to Malmstrom AFB. The base does not currently host an active air wing, thus the runway is currently inactive, with the exception of Huey helicopters used by the 40th Helicopter Flight which is part of the 341st Operations Group and the 341st Space Wing. The 1994 AICUZ analysis shows both the residential area and the proposed concrete stockpile/soil borrow areas outside of the 65 dB contour deemed acceptable for residential housing (with sound attenuation materials present).

3.6.1 Residential Areas

Vehicular traffic is the primary source of noise within the residential areas. Single family and duplex homes line the streets and a day care facility is currently operating at the intersection of Perimeter Road and Maple Street. Perimeter Road bisects the two residential areas included in the Proposed Action and is a primary arterial for on-base travel. However, Perimeter Road is blocked for further travel at Plum Street, so it is not a through street to the Main Gate from the subject residential areas.

The noise experienced by residential and other noise-sensitive receptors varies according to their distance from the roadway and the number of intervening residences. (Noise typically is attenuated, or reduced, 6 dB for every doubling of distance. In addition, one intervening row of houses reduces noise about 5 dB; additional rows reduce noise by about 10 dB.)

Ambient noise levels at the areas closest to Perimeter Road are expected to be comparable to those described in Table 8 as “urban residential.” Those residences farthest from Perimeter Road likely experience noise that is comparable to that described under “normal suburban residential.”

3.6.2 Concrete Stockpile/Soil Borrow Area

The concrete stockpile/soil borrow area is located in a remote section of the base, substantially removed from any of the base infrastructure. Areas to the east and south, off of the base, are wide-open agriculture areas with no development. To the east-northeast approximately 1,000 feet is a 40 millimeter firing range. Immediately adjacent to the concrete stockpile area to the south is an explosive ordnance disposal (EOD) practice range. Approximately ½-mile to the west is a helicopter training area.

Ambient noise levels in the area of the concrete stockpile/soil borrow site are attributable to wind and birds and/or wildlife. During periods when the adjacent land uses are active, sounds of artillery, ordnance detonation, helicopters, or construction traffic are common.

3.7 Health, Safety, and Waste Management

This section describes programs and activities currently in place at Malmstrom AFB including general public health and safety responsibilities, worker health and safety protection, solid and hazardous waste management, sewage and storm water management, environmental remediation activities, pesticide application, and harmful substances in the ROI.

3.7.1 Public Health Management

The Air Force and agencies of the City of Great Falls, Cascade County, the State of Montana, and the federal government protect public health and safety at Malmstrom AFB. The city and county provide police protection and emergency services; the Cascade County Health Department is responsible for monitoring public health and safety issues such as drinking water quality and disease control. The MDEQ regulates waste management, toxic substance reporting, and investigation and cleanup of contaminated sites. The 341st Civil Engineer Squadron/Environmental Flight (341 CES/CEV) provides regulatory guidance to Malmstrom AFB personnel regarding safe use, storage, and disposal of hazardous and toxic substances and has a pollution prevention program that includes minimization of hazardous wastes and recycling. The Environmental Office of the Montana Department of Military Affairs provides the same oversight and guidance for state-operated National Guard facilities.

3.7.2 Worker Safety and Health

Construction activities on-base are governed by the rules and regulations of the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) as codified in §40 CFR 1910 Occupational Safety and Health Standards.

3.7.3 Solid and Hazardous Waste Management

Solid and hazardous waste programs provide for the collection, handling, and disposal of waste materials, response operations to spills of hazardous materials or waste, and management of the Installation Restoration Program (IRP). In Montana, hazardous and solid waste issues are regulated by the MDEQ.

At Malmstrom AFB, the solid and hazardous waste programs are managed by the Environmental Flight (341 CES/CEV). The responsibility to develop a Spill Prevention and Response Plan and provide procedures for spill reporting, containment, cleanup, and disposal, resides with the Environmental Flight. The base Fire Department, part of the Civil Engineer Squadron, is the first responder and initial incident commander for spill response actions. The fire department requests support, as needed, from local volunteer departments in the event of a spill (Air Force 1998).

Hazardous waste management consists of the collection, storage and transportation of hazardous wastes as defined by RCRA. A release of certain materials, such as JP-8 fuel, could result in the generation of hazardous wastes. Hazardous wastes are recorded and processed through the Defense Reutilization and Marketing Office (DRMO) (Air Force 1998). DRMO is a Department of Defense (DoD) organization, part of the Defense Logistics Agency.

Solid waste collection and disposal services are provided to the base by civilian contractors and the City of Great Falls. Material is taken off base to a private landfill.

3.7.4 Sewage and Storm Water Waste Management

Sewage wastewater from the base is discharged to the City of Great Falls and managed under a service contract with a private sewage treatment management firm. Storm water is considered a wastewater discharge by the CWA. Storm water is discharged from the base in accordance with a MPDES General Discharge Permit for Storm Water Associated with Industrial Activity issued

by the MDEQ. Precipitation that falls or melts in the study area is managed in accordance with the Malmstrom AFB SWPPP (Malmstrom AFB 1998).

3.7.5 Environmental Remediation Activities

The Air Force is cleaning up contaminated sites created by past activities under the IRP. Seven IRP sites on Malmstrom AFB are either being investigated, cleaned up, or are undergoing long term monitoring (Air Force 1998). The IRP Manager in the Environmental Flight manages the IRP investigations, cleanup, and monitoring. Some investigations are being done with installation staff and contractors are performing others. Active IRP sites ST-04 and ST-05, the hydrant fueling system pipelines, are within one mile of the residential areas described in the Proposed Action. Active IRP site LF-19, the landfill northeast of the Weapons Storage Area, is within one mile of the proposed soil borrow area and concrete stockpile area.

3.7.6 Pesticides

Past spraying of herbicides has occurred throughout the base and likely have been sprayed periodically on the Proposed Action site. Because herbicides used for base wide spraying were biodegradable and would have dissipated from the soil in less than a year, any herbicides applied by Malmstrom in the past would likely not be present at this time (Air Force 1999).

3.7.7 Harmful Substances

A radon survey of the base was performed by the Bioenvironmental Engineering office in September of 1988. The results of that survey indicated that Malmstrom AFB was categorized as Low Probability. This signifies that all structures sampled had less than four picocuries of radon concentration. At this level of concentration, no further action is required (Air Force 1999).

A hazardous building material survey has recently been completed for the housing units affected by the Proposed Action (Hart Crowser 2003). The conclusions of the subject survey follow.

3.7.7.1 Asbestos-Containing Building Material

Thirteen of the 100 structures were surveyed for asbestos-containing building material (ACM). Inspectors noted numerous tenant-specific renovations throughout the units, which made unit-to-unit comparisons impossible. During the survey, the following materials tested positive for asbestos.

- Wallboard
- Floor tile with mastic
- Linoleum with paper backing and mastic
- Joint compound
- Window putty
- Caulking
- Sealant
- Concrete patch

Not all of the units were surveyed and not all of the suspect materials were sampled and analyzed. Suspect materials not analyzed must also be assumed to contain asbestos and managed as such unless analytical results can prove otherwise. The Hazardous Building Material Survey (Hart Crowser 2003) concluded that ACM and LBP are present in the housing units to be demolished.

3.7.7.2 Lead

LBP was detected in a number of painted surfaces for each unit surveyed, including basement support beams, exterior and interior door and window components, soffits, railings, carport components, and interior and exterior trim.

Toxicity Characteristic Leaching Procedure (TCLP) results for lead for the bulk building material samples showed lead concentrations < 5 mg/L. Materials collected for analysis included wallboard, flooring, wood, concrete foundation, insulation, exterior siding, and roofing materials. These materials do not have to be designated as lead-containing waste for disposal.

3.7.7.3 Other Hazardous Building Materials

The survey also identified other potentially hazardous building materials:

- Fluorescent light tubes: Fluorescent light fixtures were observed in several units. Based on the age of the fixtures, these tubes likely contain mercury vapor.
- Poly Chlorinated Biphenyl (PCB)-electrical equipment: The ballasts in the fluorescent light fixtures were not labeled with regard to PCB content and must be assumed to contain PCBs.
- Ozone-depleting substances (ODS): Each unit surveyed had a refrigerator. Based on the apparent age of these appliances, they may contain chlorofluorocarbons that are USEPA-regulated ODSs.
- Smoke detectors: Each unit contained smoke detectors throughout, which were assumed to contain batteries (either lithium or cadmium) and a small amount of radioactive material incorporated into a gold matrix.
- Fire extinguishers: Each unit contained a 10-pound pressurized fire extinguisher that should be removed and properly disposed prior to demolition.

3.8 Land Use, Transportation, and Visual Resources

This section describes land use, transportation, and visual resources on Malmstrom AFB. Land use focuses on general land use patterns, as well as management plans, policies, ordinances, and regulations. These provisions determine the type of uses that are allowable and identify appropriate design and development standards to address special use or environmentally sensitive areas. Transportation addresses roads and circulation in the project area. Aesthetic qualities in the ROI are also described.

3.8.1 Land Use

Land use on Malmstrom AFB includes developed areas in the northwestern portion of the installation and open space and weapons storage in the eastern portion (refer to Figure 2). The cantonment area generally comprises housing, administrative, warehouses, storage, and maintenance facilities. The airfield, located in the southeastern portion of the installation, is the dominant land use on the installation. Light industrial and aircraft operations and maintenance are adjacent to the airfield. Other land uses in the cantonment area are generally located to the west of the airfield.

Housing is primarily located in the northwestern portion of the installation. Recreation facilities are scattered throughout the base in areas adjacent to the family housing area and also south of the weapons storage area on the east side of the base. With the exception of Pow Wow Park, land uses in the southeastern portion of the base support military training activity and include the dog handling area, obstacle course, bivouac area, and storage. Pow Wow Park is located near the concrete stockpile area in the east portion of the installation. The park includes a manmade pond for fishing, playground equipment, and a picnic area.

Adopted plans and programs guide land use planning on Malmstrom AFB. Base plans and studies present factors affecting both on- and off-base land use and include recommendations to assist on-base officials and local community leaders in ensuring compatible development. The *Malmstrom AFB General Plan* (Malmstrom AFB 2002) provides an overall summary of strategic planning initiatives. The plan includes six components (Composite Constraints and Opportunities, Infrastructure, Land Use, Capital Improvements Program, Facilities Excellence Plan, and Five-Year Plan), which represents a summary of current base plans. The base's *Integrated Natural Resource Management Plan* (Air Force 2001a) is in place to help coordinate natural resource management.

The *AICUZ Study, A Citizen's Brochure* (Air Force 1994b) provides a summary of the AICUZ program. The Malmstrom AFB AICUZ study includes an analysis of the effects of noise, aircraft accident potential, and land use and development on Malmstrom AFB and its neighbors.

3.8.2 Transportation

Access to Malmstrom AFB is provided from U.S. Highway 87/89, east of Interstate 15 (refer to Figure 2). The Main Gate located on 2nd Avenue North and the Commercial Gate (North Gate) on 10th Avenue North provide access to the base. Second Avenue North becomes Goddard Avenue which serves as the main thoroughfare on-base. Tenth Avenue becomes 72nd Street North and intersects Goddard Avenue. Both entrance routes connect to 57th Street North (Northeast Bypass - Montana Department of Transportation Route 5205).

Seventy five percent of base traffic enters the base through the Main Gate and the remaining 25 percent enter through the North Gate (Air Force 2001b). Peak traffic hours are between 6:45 a.m. to 7:30 a.m. and 4:30 p.m. to 5:00 p.m. (Stordahl 2003).

3.8.3 Visual Resources

Malmstrom AFB is located to the east of the City of Great Falls in rolling plains about 75 miles east of the Rocky Mountains. Malmstrom AFB lies at an elevation of 3,525 feet above sea level on a plateau (Malmstrom AFB 2002). The topography is characterized by broad, gently sloping plains that have been moderately dissected by numerous streams.

The base occupies 3,600 acres. The airfield runway occupies the largest portion of the installation. The base maintains a consistent design standard that has resulted in a uniformity of architectural design. The residential area specifically reflects modern colonial or ranch style one and two story homes with overlapping plank siding (or aluminum, if upgrades have occurred) and symmetrical window and door placement.

Little native vegetation currently exists on Malmstrom AFB. Native vegetation has been altered or modified by developmental activities and the introduction of exotic grasses (Malmstrom AFB 2002).

3.9 Socioeconomics and Environmental Justice

3.9.1 Definition of the Resource

Socioeconomic resources for this analysis are characterized in terms of population and employment, with a particular emphasis on minority, low-income, and youth populations. For the purposes of this analysis, the ROI is Malmstrom AFB, with some information provided for Cascade County.

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs federal agencies to address environmental and human health conditions in minority and low-income communities. An analysis of environmental justice helps determine if actions of federal agencies disproportionately and adversely impact the human health and environmental conditions in minority and low-income communities. The approach applied in this section is in accordance with the *Interim Guide for Environmental Justice within the Environmental Impact Analysis Process* (Air Force 1997).

In addition to environmental justice issues are concerns pursuant to EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. This EO directs federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children.

3.9.2 Population and Employment

There are 3,409 active duty military personnel assigned to Malmstrom AFB, of this number 1,749 (52 percent) reside on-base while the remainder live off the installation. Family members and dependents of these personnel amount to 4,500 persons. In addition, Malmstrom AFB employs 435 appropriated fund civilian employees and 728 non-appropriated fund civilians, contractors and private-business employees. Total base population, including military personnel, civilian workers and dependents, totals 9,072 persons (Malmstrom AFB 2002).

The City of Great Falls is the seat of Cascade County and the second largest city in Montana with a 2000 population of 56,690 persons, accounting for 70 percent of the county population of

80,357 persons (U.S. Census 2000). Cascade County is home to 32,547 households with an average household size of 2.41 persons. In the predominantly rural area, Great Falls is largely dependent upon the fluctuations of the agricultural industry. Due to the area's natural terrain, Great Falls residents enjoy a high quality of life attributable to the numerous recreational opportunities and natural wildlife habitat in the area.

The operation of the base makes an important contribution to the economy of the region through both direct employment and purchases from local businesses. The presence of the base provides economic stability to the city and the region. Malmstrom's 2002 annual payroll obligated \$151.6 million to military and civilian employees, and the Air Force contributed an estimated \$97.9 million in construction and service contracts and other purchases from local businesses. Malmstrom AFB had a total annual economic impact in 2002 of over \$282 million on a 50-mile radius that includes the counties of Cascade, Judith Basin, Lewis and Clark, Teton, Pondera, and Choteau (Malmstrom AFB 2002).

3.9.3 Environmental Justice and Protection of Children

Disadvantaged groups within the ROI, including low-income and minority communities, are specifically considered in order to assess the potential for disproportionate occurrence of impacts. For the purposes of this analysis, disadvantaged groups are defined as follows:

- *Minority Population:* Persons of Hispanic origin of any race, Blacks, American Indians, Eskimos, Aleuts, Asians, or Pacific Islanders.
- *Low-Income Population:* Persons living below the poverty level, according to income data collected in U.S. Census 2000.
- *Youth Population:* Children under the age of 18 years.

Based on 2000 Census data, the incidence of persons in Cascade County with incomes below the poverty level was comparable to state levels accounting for 13.5 percent and 14.6 percent of the population, respectively (U.S. Census 2000). Nationally, 12.4 percent of the population lives below the poverty level.

Minority persons represent 10.5 percent of both the county and state populations. Native American and Aleut persons are the most predominant minority group in the county, representing 40 percent of the minority population, followed by persons of Hispanic descent who account for 23 percent of minorities. At the state level, Native Americans and Aleuts represent 60 percent of the minority population and Hispanic persons represent 19 percent of minorities (U.S. Census 2000). The youth population, which includes children under the age of 18, accounts for 26.0 percent of Cascade County's population, compared to 25.5 percent at the state level.

4.0 ENVIRONMENTAL CONSEQUENCES

Chapter 4.0 presents the environmental consequences of the Proposed Action and No Action Alternative at Malmstrom AFB for each of the resource areas discussed in Chapter 3.0. To define potential direct and indirect impacts, this chapter evaluates the project elements described in Chapter 2.0 against the affected environments provided in Chapter 3.0. Specifically, each resource considers the demolition of 100 homes, construction of 94 new homes, creation of a borrow pit for fill dirt, and the hauling and crushing/recycling of concrete and construction debris. Cumulative effects of the Proposed Action with other foreseeable future actions, as well as past and present activities, are presented in Chapter 5.0.

4.1 Air Resources

The significance of impacts to air quality is based on federal, state, and local pollution regulations or standards. Air quality impacts from a proposed activity or action would be significant if they:

- increase ambient air pollution concentrations above any NAAQS;
- contribute to an existing violation of any NAAQS;
- interfere with or delay timely attainment of NAAQS; or
- impair visibility within any federally mandated federal Class I area.

According to the USEPA's General Conformity Rule in Section 40, CFR Chapter 51 (§40 CFR 51), Subpart W, any proposed federal action that has the potential to cause violations, as described above, in a nonattainment or maintenance area must undergo a conformity analysis. Since Malmstrom AFB is not located within a nonattainment or maintenance area, a conformity applicability analysis is not required for the Proposed Action.

As previously discussed, Section 169A of the CAA established the PSD regulations to protect the air quality in regions that already meet the NAAQS. Certain national parks, monuments, and wilderness areas have been designated as PSD Class I areas, where appreciable deterioration in air quality is considered significant. The nearest federal Class I area is more than 50 miles (90 kilometers) from the region potentially affected by the Proposed Action. Therefore, the Proposed Action is unlikely to have an adverse impact on the federal Class I areas identified in section 3.1.2.

4.1.1 Potential Impact from Proposed Action

A military installation can constitute a major source of CO, VOCs, SO_x, NO_x, and PM₁₀ pollution. Sources of these pollutants include stationary sources (fossil fuel combustion and fuel or solvent evaporation), construction activities, and mobile sources. The Proposed Action, however, is a residential construction project not unique to a military installation.

Construction activities produce short-term combustion emissions (exhaust emissions from heavy equipment) and fugitive dust emissions (PM₁₀), which would cease once construction is completed. Potential effects created from housing demolition and construction activities include combustion emissions from construction vehicles and labor force transportation, and fugitive

dust from temporary storage piles, material hauling and crushing operations, and ground disturbance activities. The concrete crushing will likely be done by a mobile crusher with its own air permit that comes on base for a specified period of time once enough concrete has accumulated. The conditions on the air permit would include requirements for dust control.

Emissions generated by construction projects are short-term and temporary in nature. Fugitive dust emissions would be minimized and controlled by implementation of dust control measures in accordance with standard construction practices. For instance, frequent spraying of water on exposed soil during construction, proper soil stockpiling methods, and prompt replacement of ground cover or pavement are standard landscaping procedures that could be used to minimize the amount of dust generated during construction. Using efficient grading practices and avoiding long periods where engines are running at idle may reduce combustion emissions from construction equipment. Vehicular combustion emissions from construction worker commuting may be reduced by carpooling.

The Proposed Action would not increase the number of stationary sources at the base and would not result in an increase in vehicular traffic. Therefore, the overall impact to air resources from the Proposed Action is likely to be short-term and not significant (minor).

4.1.2 Potential Impact from the No Action Alternative

No impacts to air quality would result from the No Action Alternative, since the proposed housing phase would not occur.

4.2 Water Resources

Water resources are surface and subsurface resources that are finite, but renewable. Construction activities affect water resources by physical disturbances and material releases (e.g., sediment, chemical contaminants, etc.) into surface and groundwater. An impact to water resources at Malmstrom AFB would be considered significant if an aquifer, groundwater well, or surface water body is degraded resulting in a measurable and persistent change in a water supply or potential water supply. An impact would also be considered significant if surface or groundwater quality were degraded to a degree that exceeds federal or state water quality criteria. Increased recharge or improved water quality are examples of beneficial impacts.

4.2.1 Potential Impact from Proposed Action

The Proposed Action would not significantly impact groundwater resources. Excavations at the housing construction sites and at the borrow pit will be shallow and will not intersect groundwater (except, possibly minor perched zones). Short-term impacts due to leaks or spills of contaminants during construction (e.g., fuels, lubricants) could possibly impact shallow perched zones; however, they would not be expected to enter the deeper confined aquifers and can be readily mitigated through implementation of appropriate construction/maintenance practices.

Short-term impacts to surface water could potentially occur during construction. These potential impacts could include increased turbidity in surface waters that are adjacent to construction activities and potential contamination due to leaks and spills of fuels and lubricants from construction equipment. Use of Best Management Practices (BMP's) and engineering controls

as prescribed in the required SWPPP, and compliance with the protective provisions of the required Erosion Control Plan for the Proposed Action would significantly reduce the potential for construction-related impacts to surface water resources.

Replacement of existing housing units and final regrading of the borrow pit following fill extraction are not expected to result in a significant increase in impermeable surfaces, so no long-term impacts to groundwater recharge are expected. Likewise, long-term impacts to surface water resources would not occur.

4.2.2 Potential Impact from No Action Alternative

Under the No Action Alternative, the proposed housing development would not occur. The borrow pit would not be excavated and current surface water resources and drainage patterns would not be altered. Therefore, no significant impacts to water resources are anticipated.

4.3 Geological Resources

4.3.1 Potential Impact from Proposed Action

Implementation of the Proposed Action would involve the excavation of approximately 47,000 cubic yards (an approximately 300 by 900 foot plot) of backfill material from the proposed borrow pit. The contractor will scrape off and stockpile the native topsoil prior to fill-soil excavation. At the end of the borrow project, the stockpiled topsoil will be redistributed over the open excavation. The regarded site will be immediately reseeded with native grasses to minimize wind or rain erosion. Given the relative abundance of fill available in the local area, extraction of this quantity of fill would not constitute a significant impact to earth resources.

Slopes within the project area are generally gentle; however, water and wind erosion could occur during construction activities and borrow pit operation. Engineering controls described in Chapter 2.0 will reduce these impacts.

Many of the soils at the site are moisture sensitive and have high clay content. These soils are expansive and have caused foundation related problems. These limitations would be mitigated through the development of site-specific engineering considerations and controls during the project's design phase.

Therefore, no significant long-term impacts to site soils are expected.

4.3.2 Potential Impact from No Action Alternative

No impacts to geology or soils are expected under the No Action Alternative since this phase of the housing development would not occur nor would the borrow pit be constructed.

4.4 Biological Resources

Direct disturbances would include excavation and removal of existing habitat. Impacts to biological resources could also result from noise and dust generation during the construction of the site.

4.4.1 Potential Impact from Proposed Action

The proposed site is currently within an existing housing complex with homes, paved roads, and small yards planted with turf grasses and a few landscape shrubs. Wildlife use is limited. The short-term action would entail disturbance of the existing “urban” condition by construction activities, but a longer-term replacement of yards and landscaping will provide some limited habitat, particularly for local birds.

The proposed borrow pit is located in an area without unique or critical wildlife habitat, and is somewhat removed from highly developed areas of the base. The area has been previously disturbed and is crossed by undeveloped roads and trails.

Surface disturbance associated with the Proposed Action and new construction activities can result in an increased risk of invasion by noxious weeds. Prompt revegetation of all disturbed areas with native grasses should limit the extent of invasive species. Even if some noxious weeds root, this would not be considered a significant impact due to the limited size of the disturbance. Because of the limited amount of biological resources of the project area, the Proposed Action would have an insignificant impact on biological resources. In addition, no significant impacts to wetland areas, significant habitat areas, or threatened or endangered species are expected.

4.4.2 Potential Impact from No Action Alternative

Under the Proposed Action, this phase of housing development and the borrow pit construction would not occur. Therefore, the limited biological resources within the ROI would not be impacted by the No Action Alternative.

4.5 Cultural Resources

A number of federal regulations and guidelines have been established for the management of cultural resources. Section 106 of the NHPA, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are cultural resources that are listed in, or eligible for listing in, the NRHP. Eligibility evaluation is the process by which resources are assessed relative to NRHP significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Under federal law, impacts to cultural resources may be considered adverse if the resources have been determined eligible for listing in the NRHP or have been identified as important to Native Americans as outlined in the American Indian Religious Freedom Act (AIRFA) and EO 13007, *Indian Sacred Sites*. Native American Graves and Repatriation Act (NAGPRA) pertains to human remains, funerary objects, sacred objects and objects of cultural patrimony with which Native American lineal descendants, Indian tribes and Native Hawaiian organizations can demonstrate lineal descent. DoD *American Indian and Alaska Native Policy* (1999) provides guidance for interacting and working with federally-recognized American Indian governments. DoD policy requires that installations provide timely notice to, and consult with, tribal governments prior to taking any actions that may have the potential to significantly affect protected tribal resources, tribal rights, or American Indian lands.

Analysis of potential impacts to cultural resources considers direct impacts that may occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts can be assessed by identifying the types and locations of proposed activity and determining the exact location of cultural resources that could be affected. Indirect impacts generally result from increased use of an area.

4.5.1 Potential Impact from Proposed Action

All undisturbed areas at Malmstrom AFB have been surveyed and no NRHP-eligible archaeological resources have been identified (Air Force 1995a). Furthermore, because the upper sediments in the project area were deposited prior to human occupation of the region (approximately 12,000 years ago) and there is little deposition above that, there is little potential for deeply buried archaeological remains (Malmstrom AFB 2002). Because all of the housing units scheduled for demolition were constructed with excavated basements, the Proposed Action of removing the existing housing units and subsequent construction of new units will occur in previously disturbed sediments. Coupled with a depositional environment where buried cultural material is unlikely to occur, it is extremely unlikely that this undertaking will affect archaeological resources. No archaeological material was identified in the area designated as the borrow source when it was surveyed for archaeological resources (Air Force 1995a), and it is unlikely there are any subsurface cultural materials.

Use of existing roads along the route proposed for hauling material to the concrete stockpile facility, and the return trip to bring fill from the borrow area to the construction site will not affect archaeological or architectural resources. Should improvements to existing roads be part of the Proposed Action, this also should have no effect on archaeological resources. However, construction of additional roads or widening the existing right-of-way would be considered a separate undertaking. It would be necessary to comply with Section 106 of the NHPA, including identification and NRHP evaluation of any affected resources.

The existing housing is less than 50 years old (Malmstrom AFB 2002); it also is an architectural design repeated by the thousands in post-World War II base housing units across the country, and in civilian development as well. The units have been extensively remodeled, severely diminishing their integrity. Based on their relatively recent construction, and a determination that sample structures of this type are not eligible for the NRHP (CH2MHill 1997; Malmstrom AFB 2002), demolition of the existing housing will not affect significant architectural resources. The portion of the Chicago, Milwaukee, St. Paul, and Pacific Railroad (site 24CA 264) that borders the northern boundary of the base will not be affected by the haul route.

In the unlikely event that archaeological resources are encountered in the course of any aspect of the Proposed Action, compliance with Section 106 of the NHPA, including NRHP evaluation of all identified resources, would be necessary prior to completing the Proposed Action. The housing construction contract will include language requiring construction, demolition, or borrow activities to stop until these regulatory requirements are met, if archaeological or other cultural resources are uncovered. Coordination with the Montana SHPO regarding this action

has occurred (refer to the Appendix for correspondence). No traditional resources have been identified to date within Malmstrom AFB.

4.5.2 Potential Impact from No Action Alternative

Under the No Action Alternative, there would be demolition of housing, no removal of sediment from the borrow area, and no use of the haul route. There would be no effects to cultural resources.

4.6 Noise Resources

4.6.1 Potential Impact from Proposed Action

The residential areas where housing units will be demolished and re-built will experience construction-related noise impacts. Table 9 lists typical construction-related noise for several different types of construction. Typical noise sources include diesel engines on construction equipment (e.g., backhoes, front-end loaders, dump trucks), air compressors and jackhammers to demolish concrete structures, back-up horns on construction equipment, and movement of construction materials. Noise levels should be similar to those listed for Domestic Housing depicted in Table 9.

Table 9: Noise Levels for Construction Phases

Phase	Typical Ranges of Energy Equivalent Noise Levels at Construction Sites (L _{eq} in dBA)							
	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation/Demolition	88	79	88	79	88	71	88	78
Foundations	81	81	79	79	77	77	88	88
Erection	81	65	87	79	81	72	79	78
Finishing	88	72	89	74	89	74	84	84

I = All pertinent equipment present at site.

II = Minimum required equipment present at site.

Source: USEPA, Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

The demolition and new construction is currently scheduled to last for 16 months, although the impacts will vary depending on the phase of construction for a specific unit. The demolition of homes is only slated to last for two to three months, with construction continuing for another 14 months. The planned demolition and construction phasing is shown on Figure 6.

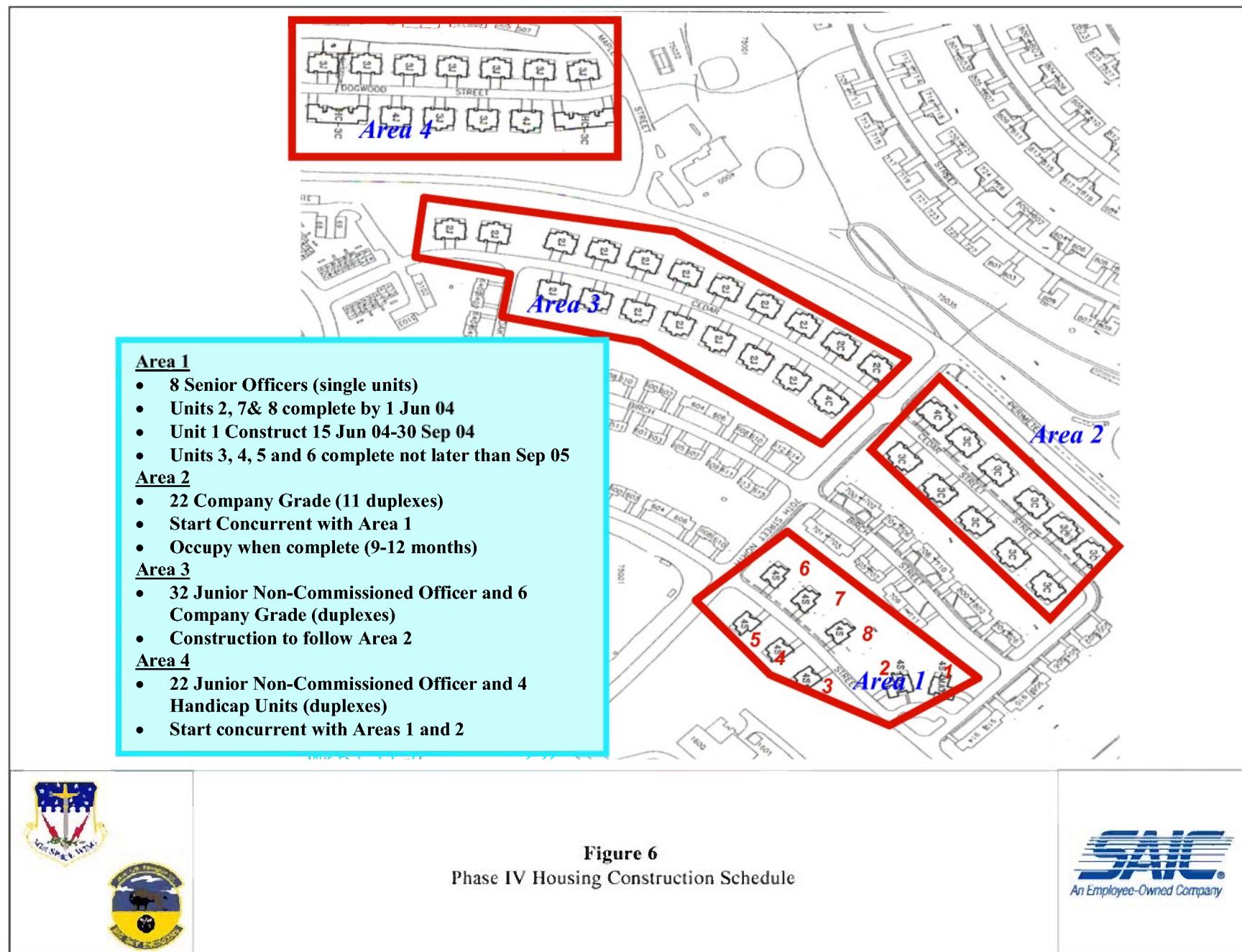


Figure 6
Phase IV Housing Construction Schedule

Demolition and construction of homes in the Dogwood neighborhood will directly impact residents on Elder Street, directly to the north of Dogwood. The current daycare facility at the intersection of Maple Street and Perimeter Road will experience increased noise attributable to the dump trucks hauling away concrete during demolition and hauling in fill soil for the new construction. The new daycare facility being constructed near the intersection of Maple and Fuschia Streets will experience similar noise impacts, although to a lesser degree as the construction vehicles will not come as close to the new facility as they will to the current daycare facility.

Similarly, replacement of homes on Cedar and Aspen Streets will directly impact residents on Birch Street. Residents in the 700 and 800 blocks of Birch will be virtually surrounded during the proposed construction project.

Demolition and excavation would be the single loudest phase of construction. Assuming this activity generated a maximum L_{eq} of 89 dBA, noise would exceed 60 dBA (the point at which construction noise could affect activity or speech communication outdoors and sleep indoors) at residential or other noise-sensitive receptors with a direct line-of-sight of the activity for a distance of 1,300 feet. Given the building density in the project area, noise would be attenuated by intervening structures at many locations. Nonetheless, noise would be perceived as very loud while construction occurred in the same neighborhood.

In residential neighborhoods, 20-cubic yard trucks would be used to remove concrete foundations and bring in fill soil. Assuming that all trucks used the same route (Perimeter Road), the trucks would generate approximately 62 dBA. This noise would not be distinguishable from the overall noise in areas where demolition and construction activities were underway. Noise would be very perceptible along the local streets that serve as primary access routes for larger areas (e.g., Aspen and Birch Streets). Impacts along these routes would not be noticeable given the limited amount of time noise exposure would occur (most areas would not experience increased truck noise for more than one construction season) and the fact that trucks would only be used during the daytime on weekdays.

Most of the proposed haul route for recyclable concrete and fill soil is through industrial and undeveloped land. Only a small percentage of the haul route actually occurs in residential areas.

One of the most essential elements in mitigating noise impacts is requiring that construction occur during daytime hours and on weekdays. All internal combustion engine-driven equipment should be equipped with mufflers that are in good condition.

Although the borrow pit excavation and associated construction traffic will have increased noise levels, they are not unlike other intermittent industrial uses in the vicinity. The only sensitive receptor near the proposed soil borrow area and concrete stockpile is Pow Wow Park. However, even though construction activity will likely occur during the park's least used periods (i.e., business hours during the work week), there still would be substantive though short-term impacts to park users, primarily parents and small children.

4.6.2 Potential Impact from No Action Alternative

No impacts associated with noise are expected under the No Action Alternative, since this phase of the housing development would not occur. The haul route would not be used nor would the borrow pit be constructed. The concrete stockpile would be unchanged.

4.7 Health, Safety, and Waste Management

4.7.1 Potential Impact from Proposed Action

Worker safety is the primary health and safety concern during construction activities. There are inherent risks associated with construction operations, particularly with the large excavation and soil/debris hauling equipment anticipated for the Proposed Action. The contractor selected to implement the Proposed Action will be subject to rigorous safety management requirements as part of the contract with the U.S. Army Corps of Engineers. These requirements are primarily associated with OSHA workplace safety practices. If the required safety precautions are enforced, no significant safety impacts are anticipated.

Demolition of the targeted housing units will generate approximately 7,000 CY of concrete for recycling. This includes basement walls, basement slabs, street curbs, sidewalks, garage floors and driveway aprons. Demolition of the houses will also generate an estimated 200 CY per structure. With 51 structures included, this equates to 10,200 CY of CDW. In a non-compacted load in a dump truck, CDW weighs approximately 300 pounds per cubic yard. This equates to approximately 1,530 tons of CDW generated during the demolition phase of the project. Malmstrom AFB currently generates 5,715 tons of solid waste annually for off-base landfill disposal (Verzuh 2003a). The demolition phase of the Proposed Action is scheduled to occur over a 2 to 3 month period. The CDW represents an approximate doubling of the current Malmstrom AFB waste stream. This waste stream is not a problem for the closest licensed landfill in terms of daily truck volume or overall landfill capacity (Wennerberg 2003).

ACM must be abated in accordance with MDEQ rule MTA Chapter 17.74 Subchapter 3. This rule prescribes the required training and abatement procedures to be followed for ACM in buildings. Disposal is subject to provisions of §40 CFR 61 Subpart M. As with LBP, ACM should be immediately loaded and hauled off-site for disposal.

The LBP tested did not fail the TCLP test, and are, therefore, suitable for direct disposal in a RCRA Subtitle D landfill. All materials containing LBP should be immediately loaded into containers or dump trucks for off-site disposal – these materials should not be stockpiled on site. Malmstrom AFB must take measures to ensure that demolition workers are protected from exposure to lead in accordance with the OSHA Lead in Construction Standard.

The presence of ACM and LBP do not constitute an impact to worker safety and health or to disadvantaged groups as long as the appropriate management procedures are followed during demolition and disposal.

A radon study was conducted in support of the Phase III housing replacement project. At the time of the investigation, radon measurements were slightly above the level that required mitigation actions. For this Phase IV housing replacement project, the design includes covering

the entire crawl space floor with 10-millimeter thickness polyethylene sheeting. The sheeting will be laid across the entire space with the seams sealed and the edges will cover the concrete foundation stem walls and sealed to the walls to prevent any radon fumes from escaping the ground. The crawlspaces will be vented in accordance with building codes. The construction specifications require the builder to conduct radon testing on the new housing units on a random basis to determine if additional mitigation is required.

4.7.2 Potential Impact from No Action Alternative

This alternative presents no health, safety or waste management impacts since construction activity associated with this phase of the housing development would not occur.

4.8 Land Use

The impact analysis for land use focuses on general land use patterns and land management practices. The methodology to assess impacts on individual land uses requires identification of those uses and determination of the degree to which those areas would be affected. Impacts to transportation are assessed with respect to the potential for disruption or improvement of current transportation patterns and systems; deterioration or improvement of existing levels of service; and changes in existing levels of safety.

Determination of the significance of the impact on visual resources is based on the level of visual sensitivity in the area.

4.8.1 Potential Impact from Proposed Action

The proposed demolition and construction would occur in an area of existing on-base housing and would be consistent with surrounding land uses. The replacement housing units would meet current Air Force “whole house/neighborhood” standards and would be visually consistent with current and proposed housing design.

The creation of a borrow pit in the southeastern portion of the base which is generally comprised of military training uses and open space would be considered a compatible, temporary land use. The nearby concrete stockpile is an existing use and the increased activity associated with the Proposed Action is not inconsistent with surrounding land uses. The use of the borrow pit may cause temporary visual impacts to Pow Wow Park visitors. Visual effects would occur only when visitor use coincides with activity at the borrow pit. Once the borrow pit is no longer needed, the topsoil will be redistributed over the open excavation.

The Proposed Action is in accordance with the General Plan. New development would be designed and constructed to be architecturally consistent and compatible with existing facilities and structures. Landscaping for the new housing units would be provided using standards identified in the General Plan.

Construction traffic associated with the implementation of the Proposed Action would comprise only a small portion of the total existing on-base traffic. Increases in traffic volumes associated with construction activity would be temporary and are not unlike volumes experienced during

earlier housing development phases. Upon completion of construction, no long-term impacts to on-base transportation systems would result.

4.8.2 Potential Impact from No Action Alternative

Under the No Action Alternative, the existing conditions would remain unchanged and impacts associated with land use, transportation, and visual resources would not occur.

4.9 Socioeconomic and Environmental Justice Impacts

In order to assess the potential socioeconomic and environmental justice impacts of the Proposed Action, employment, race, ethnicity, poverty status, and age characteristics of populations in Cascade County were analyzed, as presented in section 3.9. With regard to environmental justice and protection of children, county figures were compared to regional and state demographics to determine proportional differences. Areas containing relatively high environmental justice-related populations are given special consideration regarding potential impacts in order to address the potential of disproportionately high or adverse human health or environmental effects on these communities.

No long-term change in base employment or expenditures are anticipated as a result of the Proposed Action, which consists of a series of housing construction projects of relatively short duration (less than five years). All construction activity, including demolition, material hauling and recycling, is anticipated to occur within the boundaries of the base therefore negligible off-base socioeconomic or environmental justice impacts would be expected.

Potential issues related to environmental justice and protection of children include the presence of ACM and LBP in the existing homes and the presence of noise and dust during demolition and construction. All materials containing ACM or LBP will be handled appropriately and immediately loaded into containers or dump trucks for off site disposal – these materials will not be stockpiled on site. Measures will be taken during demolition and construction to ensure that children residing in neighboring areas have no access to the site during periods when hazardous materials are present.

Construction-related noise impacts will occur in the affected residential areas surrounding the new housing sites. Noise impacts will be limited by restricting construction activity to daytime hours on weekdays. Appropriate measures (isolation, wetting, covered loads, street sweeping, etc.) will be taken to ensure that the generation of dust during construction and hauling of materials does not create any significant health or safety risks to children and other nearby residents.

4.9.1 Potential Impact from Proposed Action

Construction activities associated with the Proposed Action will take place during FY2004-2005 (see Table 3) and will involve expenditures of approximately \$19.7 million. The proposed construction activity would generate construction jobs and income and induce regional purchases and expenditures. These potential impacts would be temporary, however, only occurring for the duration of the construction period. No permanent or long-lasting socioeconomic impacts are anticipated as a result of implementation of the Proposed Action.

4.9.2 Potential Impact From No Action Alternative

Under the No Action Alternative, Malmstrom AFB would maintain its existing housing and not undertake the proposed new home construction as described in detail in section 2.0. Failure to implement the proposed improvements would not generate any of the construction-related employment or earnings impacts associated with the Proposed Action. Implementation of the No Action Alternative would not result in any significant adverse socioeconomic or environmental justice impacts.

5.0 CUMULATIVE EFFECTS

5.1 Definition of Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from “*the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions*” (§40 CFR 1508.7). Recent CEQ guidance in considering cumulative effects affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with the Proposed Action. The scope must consider geographic and temporal overlaps among the Proposed Action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative effects are most likely to arise when a relationship or synergism exists between a Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with, or in close proximity to, the Proposed Action would be expected to have more potential for a relationship than actions that may be geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative effects.

To identify cumulative effects, this EA addresses three questions:

- (1) Does a relationship exist such that elements of the Proposed Action might interact with elements of past, present, or reasonably foreseeable actions?
- (2) If one or more of the elements of the Proposed Action and another action could be expected to interact, would the Proposed Action affect or be affected by impacts of the other action?
- (3) If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

An effort has been made to identify all actions that are being considered and that are in the planning phase at this time, including the planned housing replacements and other planned construction projects. To the extent that details regarding such actions exist and the actions have a potential to interact with the Proposed Action in this EA, these actions are included in this cumulative analysis. This approach enables decisionmakers to have the most current information available so that they can evaluate the environmental consequences of the Proposed Action.

5.2 Past and Present Actions Relevant to the Proposed Action

Malmstrom AFB is an active military installation that undergoes continuous change in mission and in training requirements. This process of change is consistent with the U.S. defense policy that the Air Force must be ready to respond to threats to American interests throughout the world. The most recent mission changes at Malmstrom were in 1997 when the 819th RED HORSE squadron was assigned and in 1998 when the Passive Space Surveillance Network Operations Center was located at Malmstrom.

The Proposed Action is part of an ongoing phased plan to upgrade all of the on-base family housing. Of the 1,404 housing units on base at Malmstrom, upgrades have already occurred for 431 units. As depicted on Figure 3, these upgrades were located in the same vicinity as those proposed in this EA.

The base, like other major institutions, requires new occasional construction, facility improvements, and infrastructure upgrades. As stated above, the Proposed Action is part of an ongoing phased plan to upgrade all of the on-base family housing. In addition to the 94 units for Phase IV (analyzed in this EA), 90 units are projected for FY 2005, 310 for FY 2006-2007, and 478 for FY 2007 and beyond.

5.3 Analysis of Cumulative Impacts

The following analysis examines how any impacts resulting from the Proposed Action at Malmstrom AFB might affect the impacts of these other actions and whether such a relationship would result in potentially significant impacts not identified when the Proposed Action is considered alone.

Although not significant, some potential cumulative impacts have been identified for the following environmental resources:

- Air Resources: Because of the nature of the development activities required, it is expected that any construction impacts on air quality will be short-term and limited to localized areas. However, prolonged construction activity may impact regional air quality attainment status.
- Geological Resources: Permanent changes to soil structure and stability can occur by disrupting and reworking certain soils. The activities would be limited to a small area and are insignificant. This does not constitute a cumulative impact.
- Noise Resources: Noise from construction activities would represent an unavoidable impact. This impact is short-term for an individual residence, but will be evident over the 16-month construction schedule, lessening over the last three months (when finish work is being completed indoors). While short-term in nature, this noise impact will continue as other construction phases are implemented. This does not constitute a cumulative impact.
- Transportation: Transportation alone was not identified as a short or long-term impact. However, as multiple phases of housing construction occur, and particularly if soil backfilling is a component of future construction projects, on-base roads will begin to deteriorate. This is a cumulative impact.
- Water Resources: Short term increases in sediment in storm water discharged from the base during construction are possible, however best management practices implemented to control erosion required by storm water discharge permits will prevent any significant short term impacts. The long term quantity and quality of storm water discharged from the base will not be affected by the Phase IV Housing Replacement project. The proposed new houses replace existing houses on existing streets and the storm water collection and total impervious surface will remain essentially the same. Future housing construction projects scheduled for Malmstrom AFB also consist of replacement of existing housing in the same locations and should not change the quality or quantity of storm water discharged from the base. No changes in cumulative environmental impacts to surface water are expected from the implementation of the proposed action.

5.4 Irreversible and Irretrievable Commitment of Resources

NEPA requires that environmental analysis include identification of “*. . . any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented.*” Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the demolition of a historic building).

For the Proposed Action, most resource commitments are neither irreversible nor irretrievable. Most environmental consequences are short-term and temporary (such as air emissions and noise from construction activities) or longer lasting but negligible (consumption of soil from the borrow area).

Those limited resources that may involve a possible irreversible or irretrievable commitment under the Proposed Action include consumption of limited amounts of materials typically associated with interior and exterior housing construction (e.g., concrete, wiring, insulation, and windows). However, the amount of these materials used is not expected to significantly decrease the availability of the resources.

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APPENDIX

*NOTICES PLACED AND COMMENTS RECEIVED ON
DRAFT EA*

WARRIOR June 27, 2003

**NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT
AND
DRAFT FINDING OF NO SIGNIFICANT IMPACT
FOR THE REPLACEMENT OF FAMILY
HOUSING AT MALMSTROM AFB**

An Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) to analyze the potential environmental consequences of demolishing or removing 100 existing Malmstrom AFB family housing units and replacing them with 94 new units in the same location.

The replacement is proposed for the 12 duplex units and two single family homes on the 700 block of Aspen Street, 60 duplex units in the 400, 500, 600, 700, and 800 blocks of Cedar Street, and 26 duplex units in the 400 and 500 blocks of Dogwood Street. Concrete foundations from the existing housing units will be stockpiled on base for recycling, and fill soil will be obtained from an existing borrow area on base to fill in the foundations and improve the grade as part of the construction.

The EA analyzes potential impacts from proposed housing replacement and the no action alternative on air quality, geology and soils, ground water, surface water, vegetation, wetlands, fish and wildlife, cultural resources, sensitive noise receptors, environmental justice, health and safety, waste generation, land use, socioeconomic and environmental justice. The EA resulted in a Finding of No Significant Impact (FONSI) to human health and the environment from the proposed action.

The draft EA and FONSI are available for review at the Malmstrom AFB Library (building 1152) on Fourth Avenue North and at the Great Falls Public Library, 301 2nd Ave. N. Comments on the EA are requested through July 27, 2003. Comments and inquiries should be directed to:

NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT
AND
DRAFT FINDING OF NO SIGNIFICANT IMPACT
FOR THE REPLACEMENT OF FAMILY HOUSING AT
MALMSTROM AFB

AFFIDAVIT OF PUBLICATION
THE GREAT FALLS TRIBUNE
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GREAT FALLS, MT 59405
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Janel Brandon being first duly sworn, deposes and says: That she is the Legal Advertising clerk of the Great Falls Tribune is a corporation duly incorporated under the laws of the State of Delaware , a newspaper of general circulation published daily in the City of Great Falls, in the County of Cascade, State of Montana, has charge of the Advertisement thereof.

That the ONE day legal regarding- 341ST CES/CEVC
#013184/ #173974

A true copy of which is hereto annexed, was published in said newspaper on the following dates: via: JULY 1ST 2003 making all publication(s).

Mark below if certification for the State of Montana.

I hereby certify that I have read sec. 18-7-204 and 18-7-205. MCA, and subsequent revisions, and declare that the price or rate charged the State of Montana for the publication for which claim is made in the attached papers in the amount of \$241.68 in excess of the minimum rate charged any other advertiser for publication of advertisement, set in the same size type and published for the same number of insertions. I further certify that this claim is correct and just in all respects, and the payment or credit has not been received.

Janel Brandon
STATE OF MONTANA
County of Cascade

On the day of JULY 2ND 2003, before me, the undersigned a Notary Public for the State of Montana, personally appeared Janel Brandon, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed same, IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal the day and year first above written.

Becky Keith
Print Name

Becky Keith
Signature

NOTARY PUBLIC for the State of Montana
Residing in Cascade County
My commission expires: 5/28/2006

An Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) to analyze the potential environmental consequences of demolishing or removing 100 existing Malmstrom AFB family housing units and replacing them with 94 new units in the same location. The replacement is proposed for the twelve duplex units and 2 single family homes on the 700 block of Aspen Street, 60 duplex units in the 400, 500, 600, 700, and 800 blocks of Cedar Street, and 26 duplex units in the 400 and 500 blocks of Dogwood Street. Concrete foundations from the existing housing units will be stockpiled on base for recycling, and fill soil will be obtained from an existing borrow area on base to fill in the foundation and improve the grade as part of the construction. The EA analyzes potential impacts from proposed housing replacement and the no action alternative on air quality, geology and soils, groundwater, surface water, vegetation, wetlands, fish and wildlife, cultural resources, sensitive noise receptors, environmental justice, health and safety, waste generation, land use, socioeconomic and environmental justice. The EA resulted in a Finding of No Significant Impact (FONSI) to human health and the environment from the proposed action. The Draft EA and FONSI are available for review at the Malmstrom AFB Library (building 1152) on Fourth Avenue North and at the Great Falls Public Library, 301 2nd Ave North. Comments on the EA are requested through July 30, 2003. Comments and inquiries should be directed to:

341 CES/CEVC
39 78th Street North
Malmstrom AFB, MT 59402-7536
Fax: (406) 731-6181
Email: 341 CES Environmental Flight @malmstrom.af.mil

Appearances

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July 28, 2003

Robert Moretti
Chief, Environmental Flight
341 CES/CEVC
39 78th Street North
Malmstrom AFB, MT 59402

RE: Comments on the Draft Environmental Assessment for Replace Family Housing
Phase 4 at Malmstrom AFB

Dear Mr. Moretti:

In section 1.5.3, *Public Health and Safety/Hazardous Waste*, on Page 8, some of the Administrative Rules of Montana (ARM) pertaining to solid waste are cited incorrectly. The ARM citations and the corrections are:

<u>Citation</u>	<u>Correction</u>
16.44	17.54
16.14	17.50

If you have any questions or need additional information, please contact me at the Permitting and Compliance Division, Community Services Bureau, Solid Waste Section, (406) 444-9879 or e-mail mdasilva@state.mt.us.

Sincerely,

Mike DaSilva
Licensing Program



**Montana Department
of
Fish, Wildlife & Parks**

341 CES/CEVC
39 78th Street North
Malmstrom AFB, MT 59402

Dear Robert J. Moretti;

Thank you for the opportunity to comment on the Environmental Assessment (EA); Replace Family housing Phase IV Malmstrom Air Force Base; Great Falls, Montana. Montana Department of Fish, Wildlife & Parks manages some important fisheries in our state, and one of the cornerstones of our management philosophy is habitat. Habitat is extremely critical, especially in Montana's wild fish management areas where we rely on natural reproduction of fishes to provide angling opportunities.

Based on a review of the EA, the analysis conducted to date appears incomplete and inadequate to determine the environmental consequences as required by the National Environmental Policy Act. The proposed action as well as recent actions where storm-water runoff has been modified was not addressed under the Environmental Consequences or the Cumulative Effects section of the EA.

In recent years, highly increased erosion rates (far above background levels) in Whitmore Coulee have been observed by several agencies. Much of the erosion, severe headcutting, and abnormally high sediment transport rates in Whitmore Coulee have been symptomatic of increased urban runoff, and changes in storm water runoff patterns. Infrastructure improvements associated with expansion of housing facilities on the base play a major role in this increased erosion. In addition to the physical damage the increased erosion has caused in Whitmore Coulee (including the loss of culverts) erosion has contributed an incredible amount of sediment into the Missouri River. This sediment is apparent by the large delta that has formed in the river. In the interest of habitat quality, FWP believes the cumulative impacts of the increased intensity and surface area of urban runoff (and the subsequent increased erosion) should be considered in the current EA. Furthermore, we encourage Malmstrom AFB to work with local, city, and state groups and agencies to remedy the problems that exist and are getting worse. Some relatively simple methods could be employed to decrease or eliminate the current problems that are occurring due to changes in the drainage and the peak flows associated with the increased urban runoff.

Thank you for the opportunity to comment on the EA, and we look forward to seeing this issue addressed in the EA and working with Malmstrom AFB in repairing the problem.

Sincerely,

Mike Aderhold
Region 4 Regional Supervisor

cc: Col. C. Donald Alston



MONTANA HISTORICAL SOCIETY

225 North Roberts • P.O. Box 201201 • Helena, MT 59620-1201
• (406) 444-2694 • FAX (406) 444-2696 • www.montanahistoricalsociety.org •

July 3, 2003

Robert J. Moretti
Chief, Environmental Flight
Department of Defense
341 CES/CEV
39 78th Street North
Malmstrom AFB, MT 59402

Ref: Draft EA Replace Family Housing Phase IV, Draft Finding of No Significant Impact, Malmstrom AFB

Dear Mr. Moretti:

We reviewed the drafts that you submitted to us regarding the demolition of family housing units constructed between 1959 and 1963. The houses involved in the project that are listed in this Draft EA are not eligible for listing on the National Register. We also reviewed or inventory of archaeological sites on the base and believe that none will be affected by the undertaking proposed in this draft.

We concur with your draft finding of no adverse effect for this project. We ask you to consult with us on changes you make to this draft that may affect cultural resources.

Thank you for consulting with us.

Sincerely,

Pete Brown, MSHP
Historic Architecture Specialist

File: DOD/Malmstrom/AFB/2003070311



STATE HISTORIC PRESERVATION OFFICE • 1410 8th Ave • P.O. Box 201202 • Helena, MT 59620-1202
• (406) 444-7715 • FAX (406) 444-6575

Cascade County Conservation District

12 Third Street N.W.
Great Falls MT 59404
Telephone 406-727-3603
Fax 406-727-4810



July 29, 2003

341 CES/CEVC
39-78th Street North
Malmstrom AFB, MT 59402

FAXED
7-29-03

**RE: Draft Environmental Assessment and Draft Finding of No Significant Impact for
the Replace Family Housing Phase 4 Project at Malmstrom AFB**

Gentlemen:

On behalf of the Cascade County Conservation District Board of Supervisors, I respectfully submit these comments with regard to the above captioned project at MAFB.

With regard to the impact to water resources, the Board of Supervisors notes specifically that the cumulative effects of flows to the Whitmore Ravine area have not been addressed. As is indicated by our recent field survey and assessment of both the west and east fingers of the Ravine, the gradient and soils are such that surface water and storm water discharge from the Base are significant contributors to the erosion occurring in the Ravine, and the sedimentation evident on Missouri River at the mouth of the Ravine, a significant historical Corps of Discovery site. Whitmore Ravine, a small ephemeral coulee, does not have the physical attributes that will allow it to handle the flows being produced from the residential areas of the Base; therefore, the coulee has, and continues to, actively downcut creating substantial instability and sediment delivery to the Missouri River. If the flows are not somehow arrested or otherwise managed, the head cutting will continue up the Ravine until it reaches the outflow pipes of the Base. From there, it is reasonable to think the roadway, fence, etc. will be threatened during a large storm event.

Since this phase of construction calls for replacing outdated housing, we urge you to consider that this may be an ideal time to redesign surface water and storm water outflows plans.

Thank you for this opportunity to comment on the anticipated construction at MAFB.

Sincerely,

CASCADE COUNTY CONSERVATION DISTRICT

Fay W. Lesmeister

Fay W. Lesmeister, Chairman
Board of Supervisors

cc: City of Great Falls
Cascade County Commissioners
Recreation Trails, Inc.

MISSOURI RIVER CONSERVATION DISTRICTS COUNCIL

c/o Cascade County Conservation District
12 Third Street NW, Suite 300
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39 78th Street North
Malmstrom AFB, Mt 59402

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7/18/03

To Whom it may concern,

The Missouri River Conservation Districts Council (MRCDC) respectfully submits these comments on the draft EA and draft Finding of No Significant Impact for the Replace Family Housing Phase 4 at Malmstrom AFB.

The mission of MRCDC clearly defines our role in terms of environmental interests and resource concerns on the Missouri River from the Headwaters to the North Dakota border. During our February 18, 2003 meeting of the Council, we toured Whitmore Ravine, which lies just north of Malmstrom AFB. Whitmore Ravine has some historical significance as the site where Clark, of Lewis and Clark, and a small scouting party took refuge under a rock outcropping, from a thunderstorm on June 6, 1805. Clark's party barely escaped with their lives when the ravine swelled with runoff water from the plateau above. The party's most significant loss was their large compass.

During the MRCDC tour of Whitmore Ravine, a newly formed delta in the Missouri River was observed. Local concerns felt that head cutting of the western most finger of the Ravine and the resulting delta in the Missouri River were a result of increased runoff from the new construction at Malmstrom AFB. Water leaving Malmstrom at the western most finger of Whitmore Ravine travels approximately 440 yards through an agricultural field of relatively gentle slope before entering Whitmore Ravine. The slopes in the Ravine are greater than 8% making the soils highly susceptible to erosion from changes in flow volumes.

The 2002 303(d) list of impaired waters list the reach of the Missouri River from Rainbow Dam to Morony Dam as probable impaired for drinking water, with possible causes of impairment as siltation, suspended solids and turbidity. Whitmore Ravine lies within this reach of the Missouri River. The formation of the new larger delta resulting from the head cutting in Whitmore Ravine is significantly contributing to the siltation, suspended solids and turbidity.

MRCDC asks that the region of influence (ROI) in the EA be expanded to include the area north of Malmstrom AFB to the Missouri since that area is the recipient of Malmstrom's surface water drainage. MRCDC also asks that the cumulative impacts of construction at Malmstrom AFB to water resources be examined, especially in relation to surface water drainage.

I would like to offer MRCDC resources that may assist in any of these endeavors.

Sincerely,

Buzz Mattelin, Chairman MRCDC
Gallatin Conservation District
Broadwater Conservation District
Lewis & Clark Conservation District
Cascade County Conservation District
Chouteau County Conservation District

Big Sandy Conservation District
Fergus County Conservation District
Blaine County Conservation District
Petroleum County Conservation District
Phillips Conservation District

Garfield County Conservation District
Valley County Conservation District
McCone Conservation District
Roosevelt County Conservation District
Richland County Conservation District



July 30, 2003

Doug Wicks, President
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**Re: Comments on Draft EA and Draft FONSI for Replace Family Housing,
Phase 4, MAFB.**

Dear Sirs:

Water Resources was not addressed in 5.3 (Analysis of Cumulative Impacts).

In 3.2.2 (Surface Water) you refer to Figure 5 and say that stormwater drainage from MAFB flows through "natural drainages" to reach the Missouri River. In fact, however, the drainages are far from "natural" as shown in the attached photo.

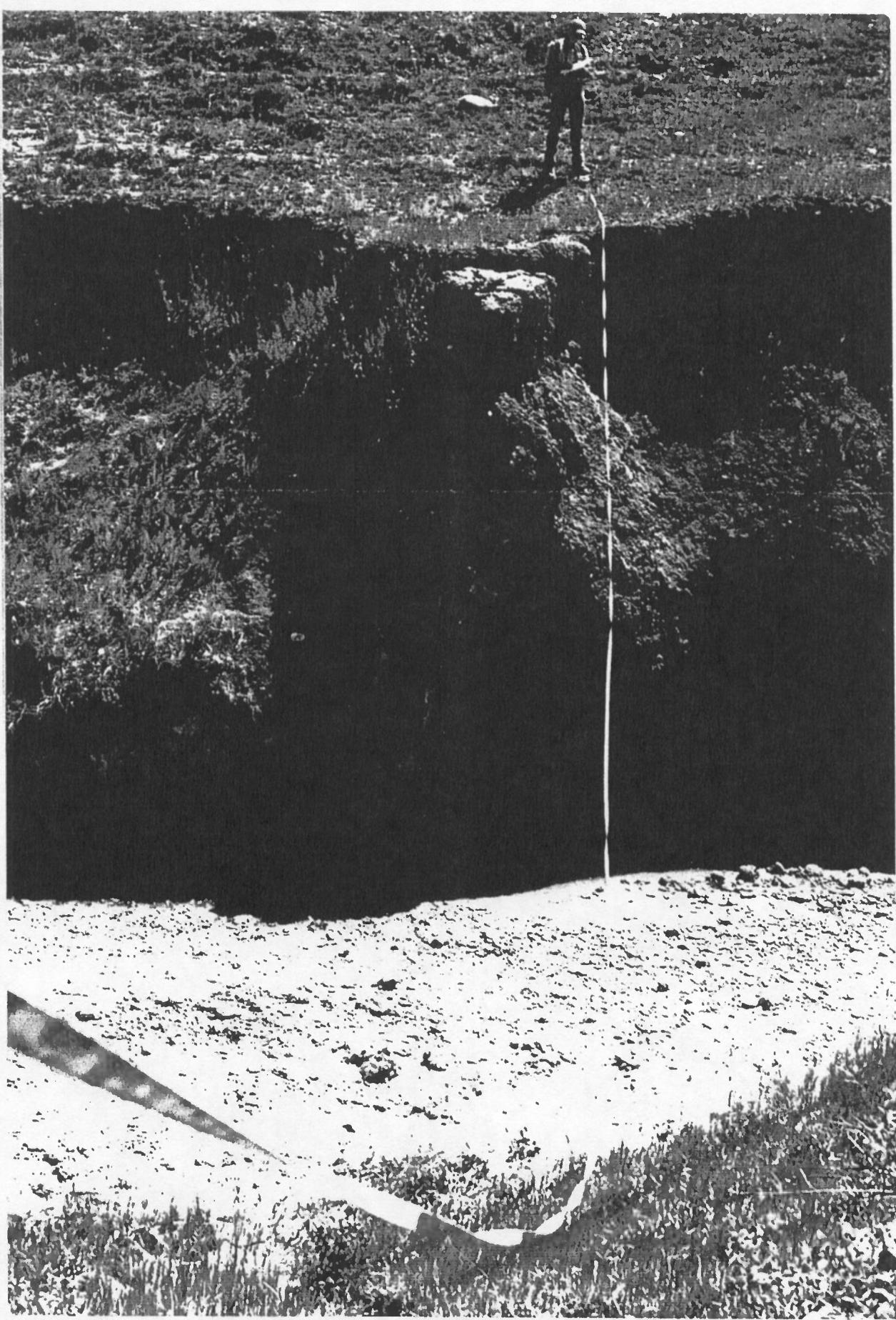
Excessive stormwater flows from MAFB would seem to be the cause of the accelerated erosion and growth of the mud delta at Cochrane Reservoir.

The cumulative effect of decades of MAFB improvements and expansions on the stormwater flows to these drainages should be addressed.

Thank you.

Doug Wicks

Cc: Dan Smith, Region 4, FWP
Gayla Wortman, CCCD



Whitmore Ravine, June, 2003.